



# MSMR

## Medical Surveillance Monthly Report

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Army Medical Surveillance Activity  
(AMSA)



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*Data in the MSMR is provisional, based on reports and other sources of data available to the Medical Surveillance Activity. Notifiable conditions are reported by date of onset (or date of notification when date of onset is absent). Only cases submitted as confirmed are included.*

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*Surveillance Trends***Frequencies, rates and trends of hospitalizations and associated lost duty time among active duty soldiers, calendar year 1997**

*Hospitalizations, general:* In 1997, there were 30,761 hospitalizations of active duty soldiers in US military hospitals worldwide. The overall hospitalization rate was 63.8 per 1000 soldiers per year which was less than 60% of the 1996 rate and less than half the rate in 1995. Figures 1-4 show steep declines in rates in 1997, overall and in all gender, age, and race-defined subgroups, compared to more gradual declines through earlier years of the decade.

*Hospital sick days, general:* During 1997, there were 164,481 "hospital sick days" (the sum of in-hospital, convalescent leave, and medical hold days); thus, hospitalizations accounted for 450.3 lost soldier-years. On average, each hospitalization of an active duty soldier resulted in 5.35 lost duty days. For the year, there was approximately one hospitalization-related lost duty day for every three active duty soldiers (noneffective rate: 341 hospital sick days per 1000 soldier-years). The noneffective rate in 1997 was more than 40% lower than in 1996 and more than 70% lower than in 1995.

*Diagnostic categories:* An international coding system (International Classification of Diseases, 9<sup>th</sup> revision, [ICD-9]) is used in military hospitals to record discharge diagnoses (up to eight diagnoses per hospitalization). The first discharge diagnosis generally indicates the primary reason for the

hospitalization; thus, first discharge diagnoses were used for this summary.

*Hospitalizations, by diagnostic category:* Overall, there were more hospitalizations (n=5,613) for "complications of pregnancy, childbirth, and the puerperium" than for any other major diagnostic category. "Diseases of the musculoskeletal system and connective tissue" (n=4,501), which were by far the leading cause of hospitalizations in 1996, were the second leading cause of hospitalization in 1997 (figure 5). "Mental disorders" (n=4,179), "injuries and poisonings" (3,611), and "diseases of the digestive system" (3,163) were the other diagnostic categories among the top five. These five categories accounted for more than two-thirds (68.5%) of all active duty hospitalizations in 1997.

Figure 5 shows hospitalization rates in 1997 and 1996 in 16 major diagnostic categories. From 1996 to 1997, rates declined in all categories except "complications of pregnancy, childbirth, and the puerperium." The largest absolute decline in rates was for "diseases of the musculoskeletal system and connective tissue" (rate difference: -17.1 per 1000 soldier-years) and "diseases of the digestive system" (rate difference: -7.5 per 1000 soldier-years). Rates declined more than 50% in six diagnostic categories: "diseases of the mus-

*Continued on page 8*

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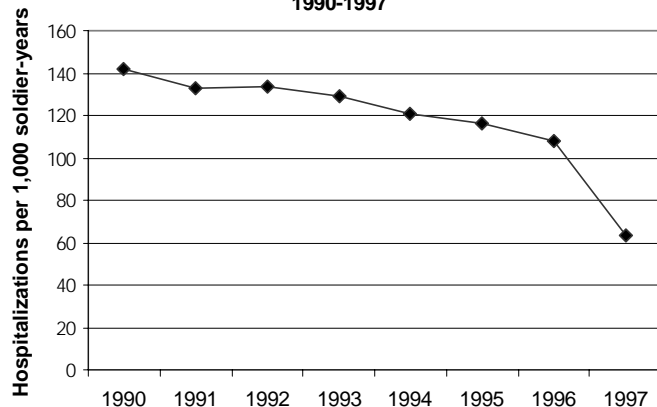
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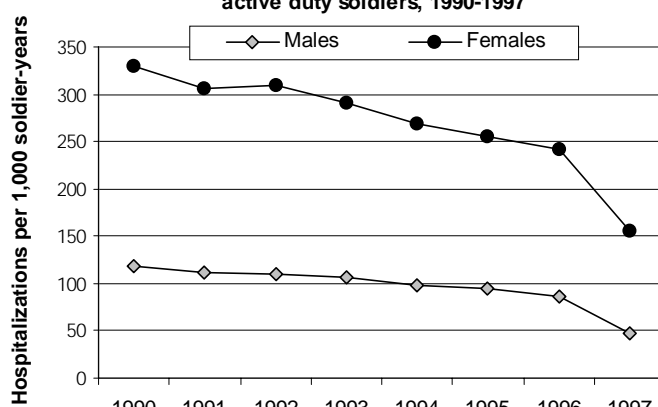
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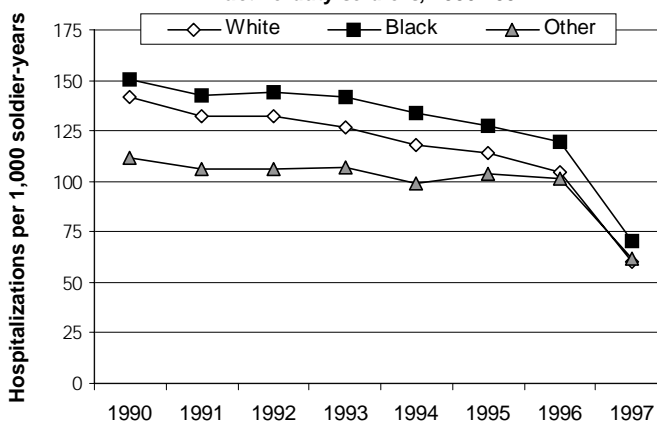
**Figure 1. Hospitalization rates, active duty soldiers, 1990-1997**



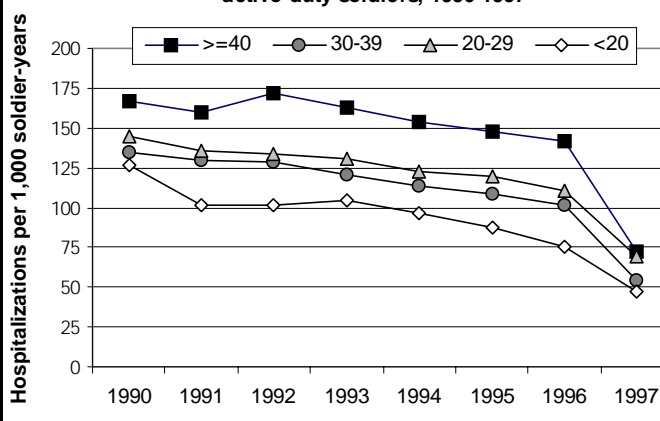
**Figure 2. Hospitalization rates, by gender, active duty soldiers, 1990-1997**



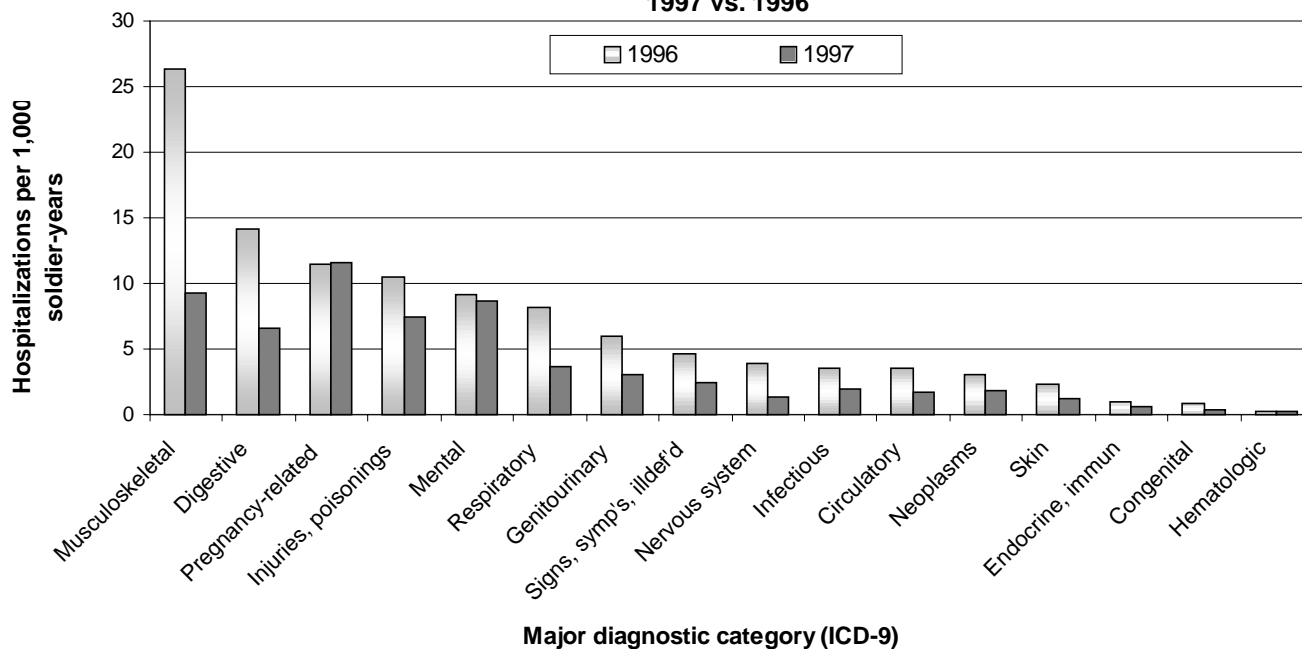
**Figure 3. Hospitalization rates, by race, active duty soldiers, 1990-1997**



**Figure 4. Hospitalization rates by age group, active duty soldiers, 1990-1997**



**Figure 5. Hospitalization rates by major diagnostic category, active duty soldiers, 1997 vs. 1996**



**TABLE I. Selected sentinel reportable diseases, US Army medical treatment facilities\*  
March, 1998**

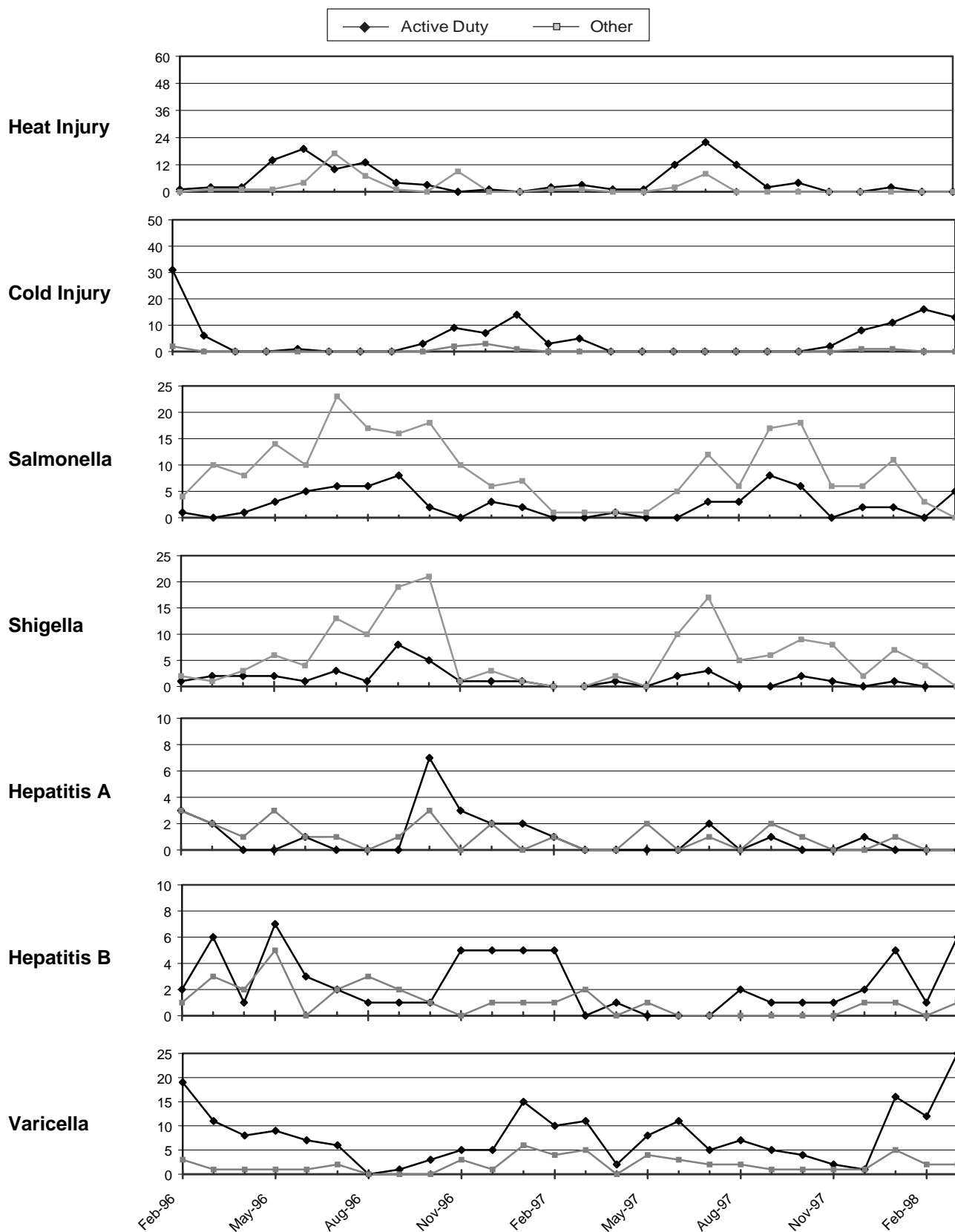
Reporting MTF/Post**	Total number of reports submitted March 1998	Environmental Injuries		Viral Hepatitis		Salmonellosis		Shigella		Varicella	
		Active Duty				Active Duty	Other	Active Duty	Other	Active Duty	Other Adult
		Heat	Cold	A	B						
		Cum. 1998	Cum. 1998	Cum. 1998	Cum. 1998	Cum. 1998	Cum. 1998	Cum. 1998	Cum. 1998	Cum. 1998	Cum. 1998
NORTH ATLANTIC RMC											
Walter Reed AMC	31	0	0	1	0	0	1	0	0	3	0
Aberdeen Prov. Ground, MD	5	0	0	0	1	0	0	0	0	0	0
FT Belvoir, VA	35	0	0	0	0	0	5	0	1	1	0
FT Bragg, NC	4	0	1	0	0	3	1	0	10	0	0
FT Drum, NY	43	0	14	0	0	0	0	0	0	0	0
FT Eustis, VA	22	0	0	0	0	0	1	1	0	4	1
FT Knox, KY	23	0	0	0	0	0	0	0	0	15	0
FT Lee, VA	0	0	0	0	0	0	0	0	0	0	0
FT Meade, MD	14	0	0	0	0	0	0	0	0	3	0
West Point, NY	18	0	0	1	1	0	0	0	0	0	1
GREAT PLAINS RMC											
Brooke AMC	23	0	0	1	1	0	0	0	0	1	0
Beaumont AMC	51	0	0	0	0	0	0	0	0	6	0
FT Carson, CO	54	0	0	0	0	1	1	0	0	2	0
FT Hood, TX	292	0	0	0	7	0	0	0	0	1	0
FT Huachuca, AZ	9	0	0	0	0	0	0	0	0	0	0
FT Leavenworth, KS	0	0	0	0	0	0	0	0	0	0	0
FT Leonard Wood, MO	73	0	1	0	0	0	0	0	0	10	6
FT Polk, LA	0	0	0	0	0	0	0	0	0	0	0
FT Riley, KS	34	0	1	0	0	0	0	0	0	2	0
FT Sill, OK	29	0	0	0	4	0	0	0	0	0	0
SOUTHEAST RMC											
Eisenhower AMC	28	0	0	0	0	0	0	0	0	0	0
FT Benning, GA	0	2	1	0	0	0	1	0	0	1	0
FT Campbell, KY	73	0	2	0	0	0	0	0	1	1	2
FT Jackson, SC	28	0	0	1	0	0	0	0	0	3	0
FT McClellan, AL	0	0	0	0	0	0	0	0	0	0	0
FT Rucker, AL	2	0	0	0	0	0	0	0	0	0	0
FT Stewart, GA	0	0	0	0	0	0	0	0	0	1	0
WESTERN RMC											
Madigan AMC	54	0	0	0	0	0	0	0	0	3	0
FT Irwin, CA	6	0	0	0	0	0	0	0	0	0	0
FT Wainwright, AK	11	0	9	0	0	0	0	0	0	0	0
OTHER LOCATIONS											
Tripler	41	0	0	0	0	0	1	0	0	0	0
Europe	118	0	21	2	9	3	6	0	0	2	1
Korea	32	0	0	0	0	0	0	0	0	1	0
Total	1153	2	50	6	23	7	17	1	12	60	11

\* Based on date of onset.

\*\* Reports are included from main and satellite clinics. Not all sites reporting.

Date of Report: 7-Apr-98

**FIGURE I. Selected sentinel reportable diseases, US Army medical treatment facilities\***  
**Cases per month, Apr 96 - Mar 98**



\* Reports are included from main and satellite clinics. Not all sites reporting.

**TABLE II. Reportable sexually transmitted diseases, US Army medical treatment facilities\*  
March, 1998**

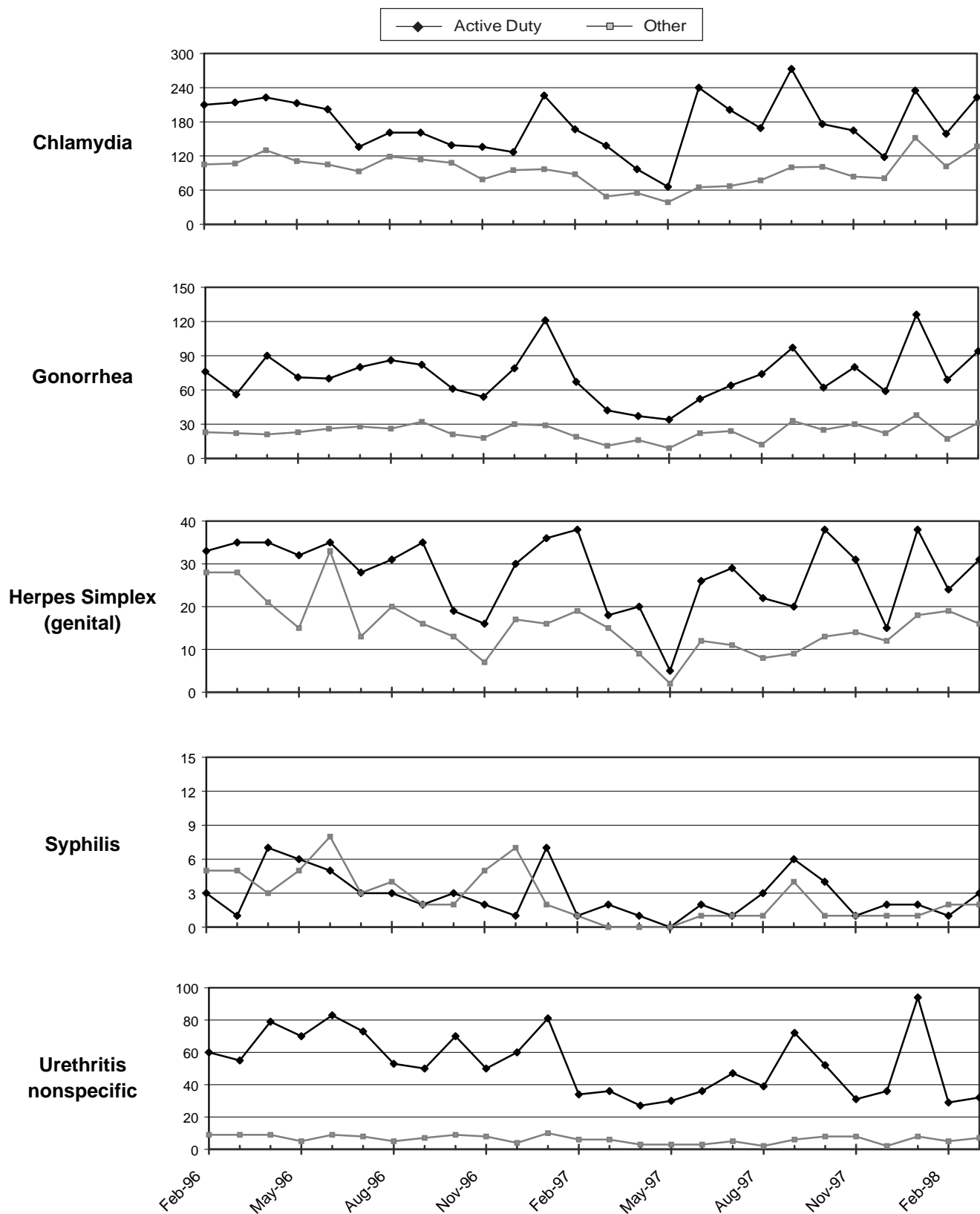
Reporting MTF/Post**	Chlamydia		Urethritis non-spec.		Gonorrhea		Herpes Simplex		Syphilis Prim/Sec		Syphilis Latent		Other STDs**	
	Cur. Month	Cum. 1998	Cur. Month	Cum. 1998	Cur. Month	Cum. 1998	Cur. Month	Cum. 1998	Cur. Month	Cum. 1998	Cur. Month	Cum. 1998	Cur. Month	Cum. 1998
<b>NORTH ATLANTIC RMC</b>														
Walter Reed AMC	7	17	0	2	2	6	3	8	0	0	0	0	0	0
Aberdeen Prov. Ground, MD	0	5	0	0	0	1	0	1	0	0	0	0	0	0
FT Belvoir, VA	17	54	0	0	5	12	5	17	0	0	0	0	3	6
FT Bragg, NC	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FT Drum, NY	7	26	0	0	0	6	0	5	0	0	0	0	0	0
FT Eustis, VA	13	27	0	0	4	10	0	0	0	0	0	0	0	0
FT Knox, KY	23	53	0	0	8	17	6	19	0	0	0	0	0	0
FT Lee, VA	0	11	0	0	0	8	0	0	0	0	0	0	0	0
FT Meade, MD	7	19	8	18	1	4	3	10	0	0	0	0	0	0
West Point, NY	4	5	0	0	1	3	1	4	0	0	0	0	0	0
<b>GREAT PLAINS RMC</b>														
Brooke AMC	11	57	0	0	3	13	0	1	1	1	0	0	0	0
Beaumont AMC	18	76	0	0	5	24	1	6	0	0	0	1	0	0
FT Carson, CO	26	88	9	37	9	22	3	12	1	1	0	0	0	0
FT Hood, TX	63	262	11	46	24	114	8	21	0	0	0	0	1	2
FT Huachuca, AZ	2	7	0	0	0	2	0	0	0	0	0	0	0	0
FT Leavenworth, KS	0	1	0	0	0	0	0	0	0	0	0	0	0	0
FT Leonard Wood, MO	13	30	2	9	4	11	0	0	0	0	0	0	0	0
FT Polk, LA	0	15	0	0	0	7	0	0	0	0	0	0	0	0
FT Riley, KS	29	61	0	0	8	18	1	1	0	0	0	0	0	0
FT Sill, OK	11	37	2	11	5	33	1	4	0	0	0	0	0	0
<b>SOUTHEAST RMC</b>														
Eisenhower AMC	7	27	0	0	1	4	1	11	0	0	0	0	0	0
FT Benning, GA	0	17	0	0	0	13	0	2	0	0	0	0	0	0
FT Campbell, KY	27	117	0	0	20	57	0	9	0	0	0	0	0	0
FT Jackson, SC	1	10	0	0	1	8	0	2	0	0	0	0	0	1
FT McClellan, AL	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FT Rucker, AL	4	10	0	0	2	3	2	2	0	0	0	0	0	0
FT Stewart, GA	0	30	0	51	0	19	0	15	0	0	0	0	0	0
<b>WESTERN RMC</b>														
Madigan AMC	24	88	7	44	6	13	3	9	0	0	0	0	0	0
FT Irwin, CA	2	9	0	0	1	2	0	0	0	0	0	0	0	0
FT Wainwright, AK	6	14	0	0	0	1	0	0	0	0	0	0	0	0
<b>OTHER LOCATIONS</b>														
Tripler	26	52	0	0	10	17	6	23	0	0	0	0	0	0
Europe	11	116	0	0	1	17	2	10	0	2	0	1	0	1
Korea	1	15	0	0	4	7	1	1	0	0	0	0	0	0
<b>Total</b>	<b>360</b>	<b>1356</b>	<b>39</b>	<b>218</b>	<b>125</b>	<b>472</b>	<b>47</b>	<b>193</b>	<b>2</b>	<b>4</b>	<b>0</b>	<b>2</b>	<b>4</b>	<b>10</b>

\* Reports are included from main and satellite clinics. Not all sites reporting.

Date of Report: 7-Apr-98

\*\* Other STDs: (a) Chancroid (b) Granuloma Inguinale (c) Lymphogranuloma Venereum (d) Syphilis unspec. (e) Syph, tertiary (f) Syph, congenital

**FIGURE II. Reportable sexually transmitted diseases, US Army medical treatment facilities\***  
**Cases per month, Apr 96 - Mar 98**



\* Reports are included from main and satellite clinics. Not all sites reporting.



Continued from page 2

culoskeletal system and connective tissue" (1997:1996 rate ratio [RR]: 0.35), "diseases of the nervous system and sense organs" (RR: 0.36), "congenital abnormalities" (RR: 0.44), "diseases of the respiratory system" (RR: 0.45), "diseases of the digestive system" (RR: 0.47), and "diseases of the circulatory system" (RR: 0.49).

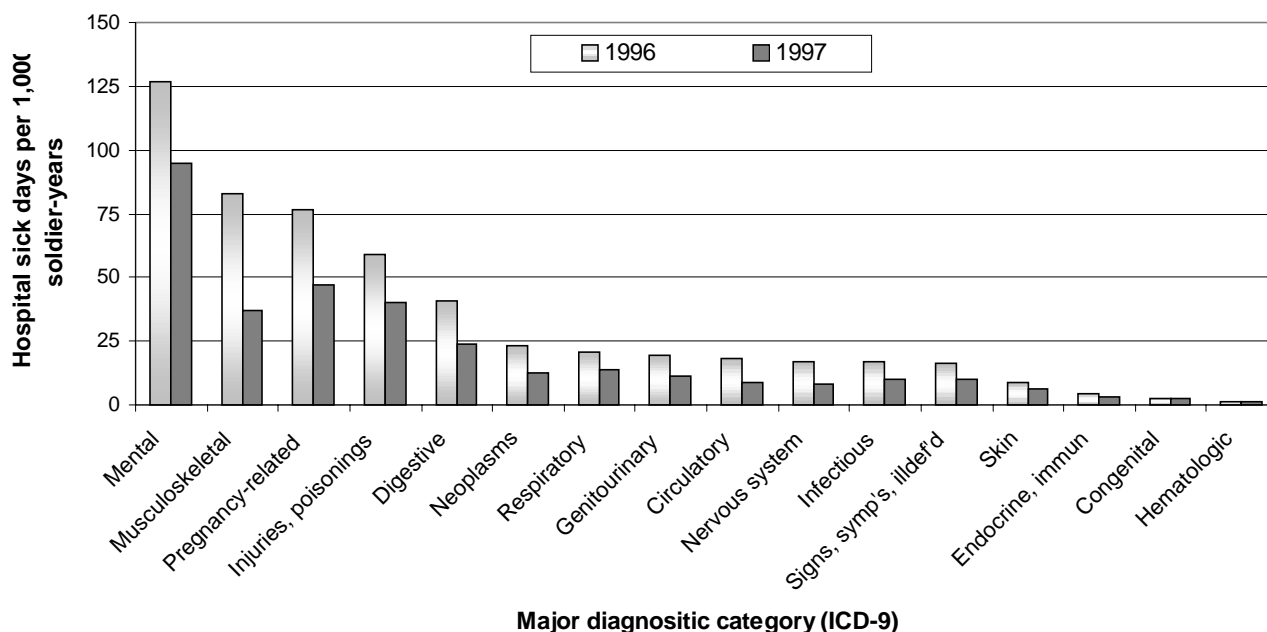
*Hospital sick days ("noneffective days"), by diagnostic category:* Overall, there were more hospital sick days (n=45,587) for "mental disorders" than any other major diagnostic category (table S3). "Injuries and poisonings" (n=24,399), "complications of pregnancy, childbirth, and the puerperium" (n=22,695), "diseases of the musculoskeletal system and connective tissue" (n=17,823), and "diseases of the digestive system" (n=11,520) were the other diagnostic categories that accounted for more than 10,000 lost duty days each during the year. These five categories accounted for nearly three-fourths (74.2%) of all hospitalization-related noneffective days in 1997.

In 1997, compared to 1996, hospitalization-related noneffective rates declined in all major categories (figure 6). The largest absolute declines were for "diseases of the musculoskeletal system and connective tissue" (noneffective rate difference: -46.1 days per 1000 soldier-years), "mental disorders" (noneffective rate difference: -32.4 days per 1000 soldier-years), and "complications of pregnancy, childbirth, and the puerperium" (noneffective rate difference: -29.7 days per 1000 soldier-years). Noneffective rates declined more than 50% in two categories: "diseases of the musculoskeletal system and connective tissue" (1997:1996 noneffective rate ratio [RR]: 0.45) and "diseases of the nervous system and sense organs" (RR: 0.49).

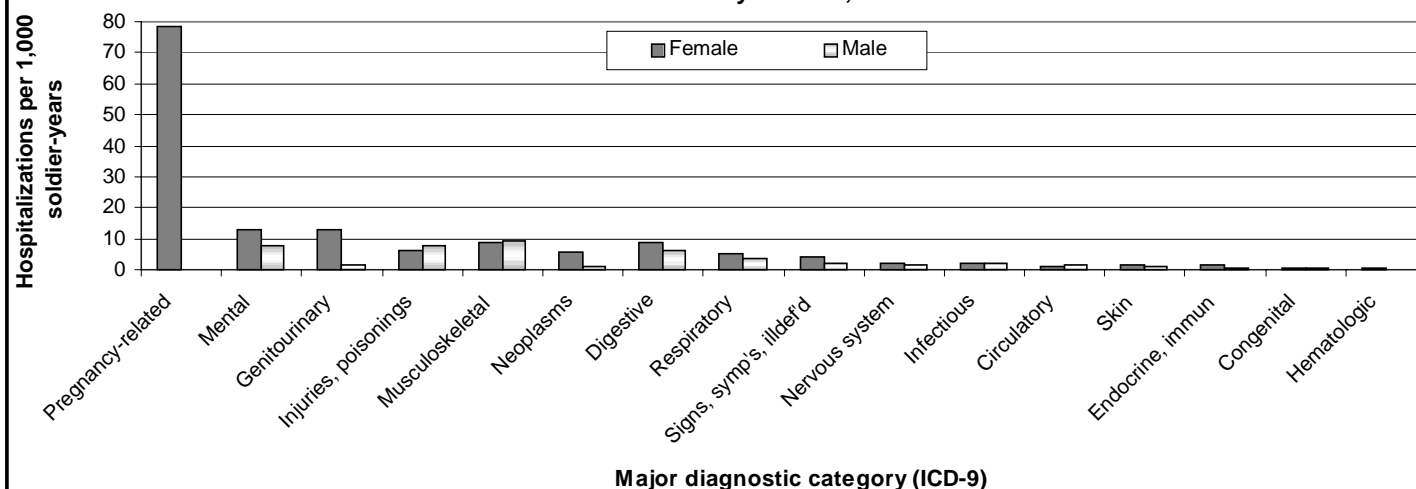
*Hospitalizations, by age group (tables S2, S4):* Armywide and among males, the highest hospitalization rates were among the oldest (40 and older) soldiers, but the highest noneffective rates were among the youngest (< 20 years old). Among females, both hospitalization and noneffective

Continued on page 10

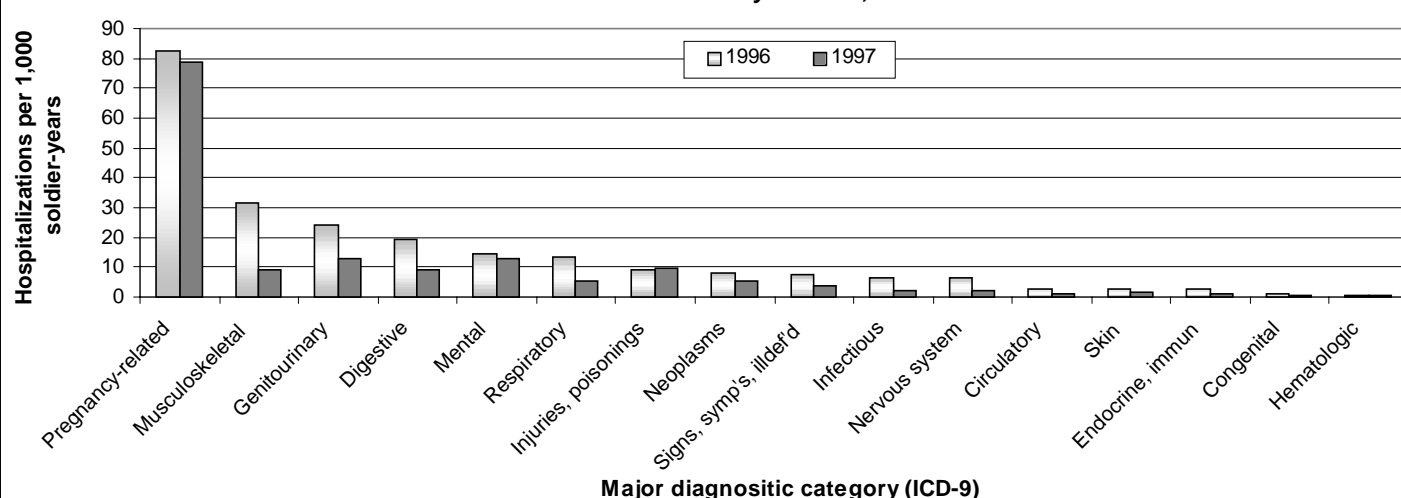
**Figure 6. Non-effective rates by major diagnostic category, active duty soldiers, 1997 vs. 1996**



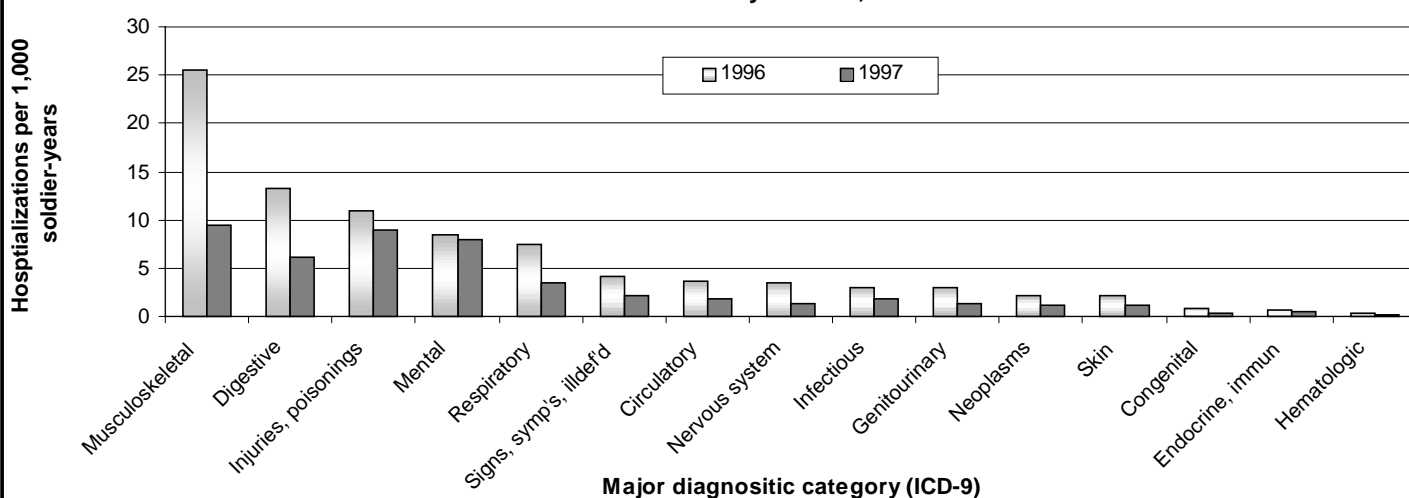
**Figure 7. Hospitalization rates, by gender and major diagnostic category, active duty soldiers, 1997**



**Figure 8. Hospitalization rates, by major diagnostic category, female active duty soldiers, 1997 vs. 1996**



**Figure 9. Hospitalization rates by major diagnostic category, male active duty soldiers, 1997 vs. 1996**



*Continued from page 8*

tive rates were highest among soldiers in their twenties.

*Hospitalizations, by gender (tables S1-2, figures 7-9, page 9):* Hospitalizations related to "pregnancy, childbirth, and the puerperium" accounted for more than half (50.4%) of all hospitalizations of females (n=5,613; rate: 78.5 per 1000 soldier-years). "Mental disorders" (n=929; rate: 13.0 per 1000 soldier-years) and "diseases of the genitourinary system" (n=909; rate: 12.7 per 1000 soldier-years) were the next two leading causes of female hospitalizations. Female hospitalization rates declined from 1996 to 1997 in all categories except "injuries and poisonings." The most significant absolute declines in hospitalization rates were for diseases of the musculoskeletal (rate difference (RD): -22.6 per 1000 soldier-years), genitourinary (RD: -11.4 per 1000 soldier-years), digestive (RD: -10.6 per 1000 soldier-years), and respiratory (RD: -8.2 per 1000 soldier-years) systems.

Among males, there were more hospitalizations for "diseases of the musculoskeletal system and connective tissue" (n=3,866; rate: 9.4 per 1000 soldier-years), "mental disorders" (n=3,250; rate: 7.9 per 1000 soldier-years), and "injuries and poisonings" (n=3,168; rate: 7.7 per 1000 soldier-years) than other causes. Male hospitalization rates declined from 1996 to 1997 in all categories, but the most significant absolute declines were for diseases of the musculoskeletal (rate difference (RD): -16.1 per 1000 soldier-years) and digestive (RD: -7.0 per 1000 soldier-years) systems.

Together, "diseases of the musculoskeletal system and connective tissue" and "injuries and poisonings" accounted for more than one of every three (35.8%) male hospitalizations but less than one of ten (9.7%) female hospitalizations. When hospitalizations related to "pregnancy, childbirth, and the puerperium" were excluded, "musculoskeletal and connective tissue diseases" and "injuries and poisonings" accounted for nearly one fifth (19.8%) of all female hospitalizations.

*Noneffective days, by gender (tables S3-4,*

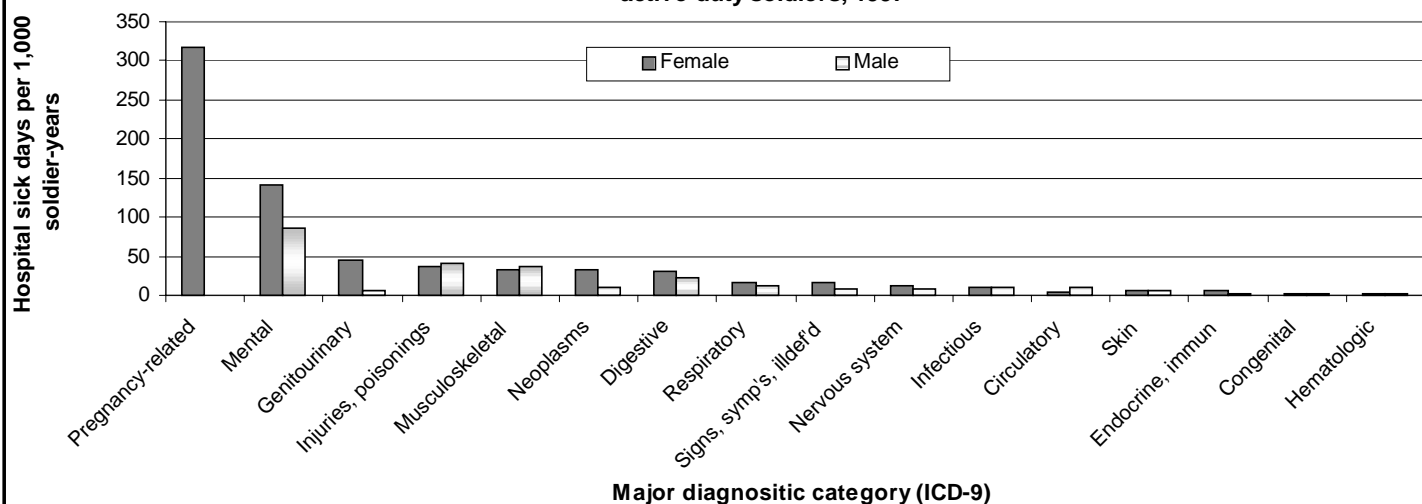
*figures 10-12):* Hospitalizations related to pregnancy, childbirth, and the puerperium and to mental disorders accounted for 62.8% of all hospital sick days among females. Female noneffective rates declined from 1996 to 1997 in nearly all diagnostic categories. The largest absolute declines were for pregnancy-related hospitalizations (RD: -232.3 days per 1000 soldier-years), musculoskeletal system/connective tissue (RD: -47.8 days per 1000 soldier-years), and mental (RD: -43.1 days per 1000 soldier-years) disorders.

Among males, hospitalizations related to mental disorders, injuries and poisonings, and musculoskeletal and connective tissue disorders accounted for 60.4% of all hospital sick days. Male noneffective rates declined from 1996 to 1997 in nearly all categories. The most significant absolute declines were for musculoskeletal/connective tissue (rate difference (RD): -45.8 per 1000 soldier-years) and mental (RD: -30.9 per 1000 soldier-years) disorders.

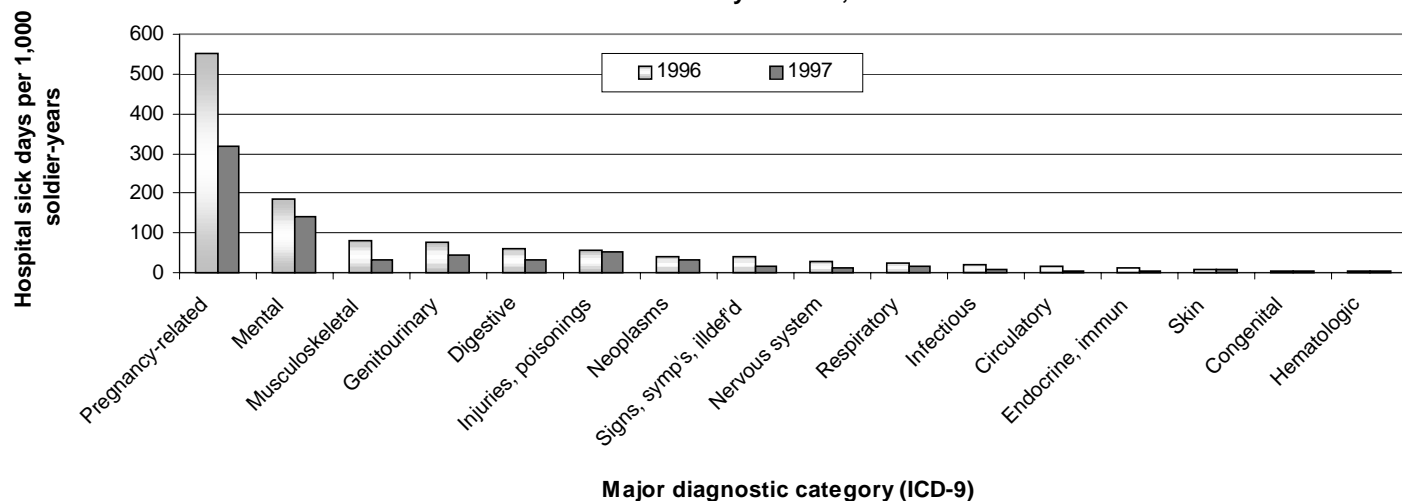
**Editorial note:** In 1997, hospitalization rates and associated lost duty days sharply declined. However, the magnitudes of the declines in 1997 greatly exceeded the trends of gradual decline during the earlier years of the 1990s. Undoubtedly, these findings reflect the ongoing and enhanced effects of managed care initiatives on hospitalization (e.g., criteria for admission, length of stay) and evaluation/treatment (e.g., inpatient vs. outpatient) practices.

Still, as in the past, significant proportions of hospitalizations and associated lost duty days are related to injuries of younger soldiers and chronic and late effects of injuries among older soldiers; psychiatric conditions continue to account for relatively large amounts of lost duty time, particularly among younger soldiers; pregnancies, childbirth, and the puerperium continue to account for large proportions of hospitalizations and lost duty time among female soldiers; and finally gastrointestinal disorders continue to account for a significant number of soldier hospitalizations. Prevention and research programs should focus on these areas.

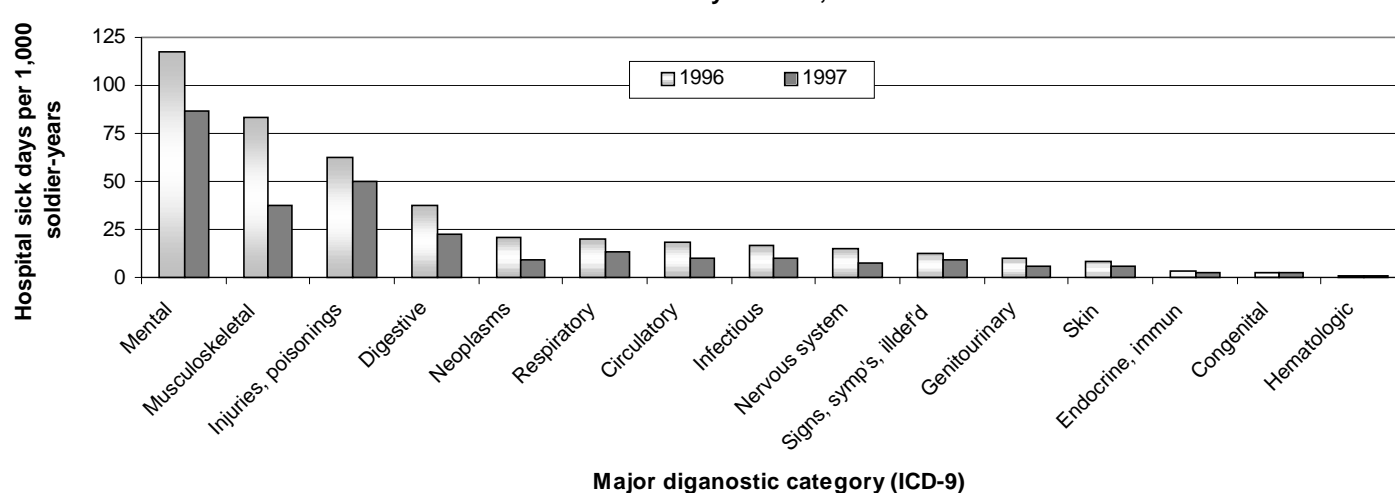
**Figure 10. Noneffective rates by gender and major diagnostic category, active duty soldiers, 1997**



**Figure 11. Noneffective rates by major diagnostic category, female active duty soldiers, 1997 vs. 1996**



**Figure 12. Noneffective rates by major diagnostic category, male active duty soldiers, 1997 vs. 1996**



## Case Reports

### **Leptospirosis in the Pacific: Tripler Army Medical Center**

During the past twelve months, five children were referred to Tripler Army Medical Center (TAMC) with severe, systemic leptospirosis. Four of the cases were from Kosrae State in the Federated States of Micronesia (FSM), and the fifth, the dependent daughter of a retired Air Force member, was from Guam. Thus, of nine children with leptospirosis referred to TAMC in the past three years, eight were from Kosrae. This report describes the five most recent cases.

#### **Case #1**

In March 1997, an eight-year old Micronesian boy with healing, impetiginous lesions on his lower extremities developed fever, headache, malaise, nausea, vomiting, and diarrhea with acute renal failure. He was oliguric with hematuria and proteinuria, and his BUN and creatinine were elevated. In addition, he was anemic with a hemocrit of 28%. An ultrasound examination revealed enlarged, echogenic kidneys, ascities, and bilateral pleural effusions. Intravenous corticosteroids were administered just prior to his transfer to TAMC, and soon afterwards, he entered the polyuric phase of his disease and rapidly recovered.

#### **Case #2**

An almost five-year old Chamorro girl was medically evacuated from the US Naval Hospital Guam to TAMC in June of 1997 because of persistent pleural effusions with hypoxia. Following an upper respiratory infection, she developed fever, pains in her abdomen, back, and shoulders, pneumonia, and bilateral pleural effusions which nearly obliterated her right hemithorax. Chest tube drainage failed to resolve her symptoms, and she was emergently transferred to TAMC. Her BUN and transaminases were mildly elevated, and she had increased bilirubin. Her lipase was 1183 U/l and amylase 165 U/l. She also had anemia (hemoglobin 8.4 g/l, hematocrit 24.5%), thrombocytopenia (plate-

lets 33,000), and leukocytosis (WBCs 15.6). Her urinalysis revealed trace protein and hematuria. Serologic tests for IgM and IgG anti-mycoplasmal antibodies were negative, but a late convalescent serum was positive for anti-leptospiral antibodies (*L. interrogans*, serovar *bratislava*). The child responded rapidly to high dose pulse intravenous corticosteroids with resolution of her pneumonia and pleural effusions. Further questioning revealed that the family lived in an open house downhill from a pig farm. Her parents stated that, with heavy rains, water flowed down the hill and through the house.

#### **Case #3**

In July 1997, an 8 1/2 year old Micronesian girl was transferred to TAMC from Kosrae with acute renal failure following a febrile illness with headache, dizziness, persistent vomiting and anuria for five days. The referring physician was advised to pulse her with intravenous corticosteroids (hydrocortisone) prior to her transfer. She voided one liter of urine enroute, and on admission to TAMC, she was in the polyuric phase of her renal failure. Her creatinine was 7.9 mg/dL and BUN 81 mg/dL. A complete blood count revealed anemia (hemoglobin 9.1, hematocrit 26.4%) and thrombocytopenia (platelet count 63,000). Her amylase was 425 and lipase 551. Her cerebrospinal fluid (CSF) was normal. A convalescent serum specimen had an elevated concentration (1:6,400) of antibodies to *L. interrogans* (serovar *bratislava*).

#### **Case #4**

Later in July 1997, a 12 1/2 year old Micronesian boy with fever of 104°F, severe bitemporal headaches, conjunctivitis, photophobia, dizziness, vomiting, watery diarrhea, seizures, and anuria for six days was referred to TAMC. His BUN was 78 and creatinine 10.3. Although he was transfused with whole blood prior to his transfer, he had thrombocy-

topenia (platelets 49,000) at the time of his admission to TAMC. A chest radiograph revealed a right pleural effusion. His amylase was 348 and lipase 1235. His CSF was remarkable for mildly elevated glucose (102 mg/dL). The child was pulsed with intravenous hydrocortisone prior to his transport, and he diuresed two liters enroute. Further treatment with intravenous methylprednisolone obviated the need for dialysis. He rapidly recovered and was discharged well 10 days later. A convalescent serum specimen had an elevated concentration (1:12,800) of antibodies to *L. interrogans* (serovar *autumnalis*).

#### Case #5

In August 1997, a 16 1/2 year old Micronesian boy with generalized body aches, fever, headache, dizziness, nausea, vomiting, watery diarrhea, jaundice, conjunctival suffusion, and renal failure of five days duration was referred to TAMC. His BUN was 138, creatinine 13.1, bilirubin 8.2, amylase 1141, uric acid 16.1, WBCs 17.9, hemoglobin 11.9, hematocrit 35.7%, and platelets 50,000. At the time, no airplanes were scheduled to fly into or out of Kosrae for two weeks; thus, the patient could not be transferred to TAMC for evaluation and care. Instead, the patient was followed through daily telephone consultations; and after three days of treatment with intravenous hydrocortisone, the boy rapidly diuresed and recovered uneventfully. A convalescent serum specimen had an elevated concentration (1:6,400) of antibodies to *L. interrogans* (serovar *autumnalis*).

All five cases were treated with antibiotics (most with amoxicillin) early in their clinical courses; in addition, several cases received intravenous penicillin when they were admitted to TAMC. All cultures were negative for leptospira; thus, it is difficult to characterize the effects of the antibiotics on the clinical courses of the affected children.

**Editorial comment:** Leptospirosis is caused by a spirochete, *Leptospira interrogans*, that is spread through the urine of infected animals. It is transmitted

to humans through skin (especially when broken or abraded) or mucous membranes when exposed to urine-contaminated fresh water. Leptospirosis is a major public health problem in the tropics, and the State of Hawaii has the highest incidence in the United States.<sup>1</sup> The five cases presented in this report underscore the importance of this common zoonosis in the Pacific Basin.

Kosrae is a volcanic island state in the Federated States of Micronesia with a population of approximately 8,000. Children of Kosrae are eligible for care at TAMC under provisions of the Pacific Island Health Care Project, a program that provides specialty care to underserved peoples of the United States Associated Pacific Islands. Annual rainfall in Kosrae exceeds 300 inches per year, and the rainy season typically extends from July to November with a transitional period in June. Thus, four of the five cases in this report presented during Kosrae's traditional rainy season.

The main occupation of the people of Kosrae is subsistence farming. As such, they tend to work in taro ponds and banana patches, to keep feral and semi-domesticated pigs, to bathe and wash their clothing in surface streams and rivers, and to collect water for other uses in rainwater catchment systems – all of which are known risk factors for leptospirosis<sup>2,3</sup>. The leptospiral serovar *bratislava*, identified in two of the affected children, is associated with pigs which may be the primary reservoir on the island. Rats and dogs are other likely reservoirs, and both are abundant on Kosrae. Public health officials of Kosrae are well aware of the leptospirosis threat. In response, they post warnings near known contaminated streams and conduct ongoing education programs.

Clinical expressions of leptospirosis of Kosrae origin seem particularly virulent; for example, acute renal failure and pancreatitis were relatively common and severe<sup>4</sup> in the recent cases. From 1989 to 1997, there were 18 patients (11 children, 7 adults) with leptospirosis cared for at TAMC. Of these, eleven patients (61%) had pancreatitis which was associated with younger age (10/11 were



children), acute renal failure (10/11), and residence in Kosrae State (8/11).<sup>5</sup> The relative severity of recent Kosrae cases may be related to characteristics of endemic serovars. In addition, the clinical courses may have been exacerbated by unavailability and general inadequacy of medical services.

Leptospirosis is a well documented threat to military forces during high risk seasons in endemic areas. For example, in 1942, at Fort Bragg, North Carolina, there was an outbreak of a distinctive and debilitating febrile illness among military trainees. Despite intensive efforts to determine the etiology, the cause of "Fort Bragg fever" remained unknown. Outbreaks of the unexplained illness recurred at Fort Bragg each summer until the end of World War II. In 1951, using archived patient sera, the leptospiral etiology of "Fort Bragg fever" was finally elucidated.<sup>6</sup> In the early 1980s, Army units that trained in Panama during the rainy season were found to have predictably high attack rates of leptospirosis. Shortly afterwards, a controlled study among soldiers training in Panama documented the safety and effectiveness of weekly doxycycline prophylaxis for preventing leptospirosis in high risk settings.<sup>7</sup>

In summary, leptospirosis continues to pose a significant threat to military forces in endemic areas such as Micronesia, particularly during rainy seasons. Awareness of regional levels of ende-

micity and high indexes of clinical suspicion are necessary to prevent new infections and to rapidly identify and treat clinical cases. Doxycycline, 200 mg per week, has been shown to be safe and effective as chemoprophylaxis against leptospirosis during high risk exposures (e.g., jungle operations during rainy seasons in Panama).

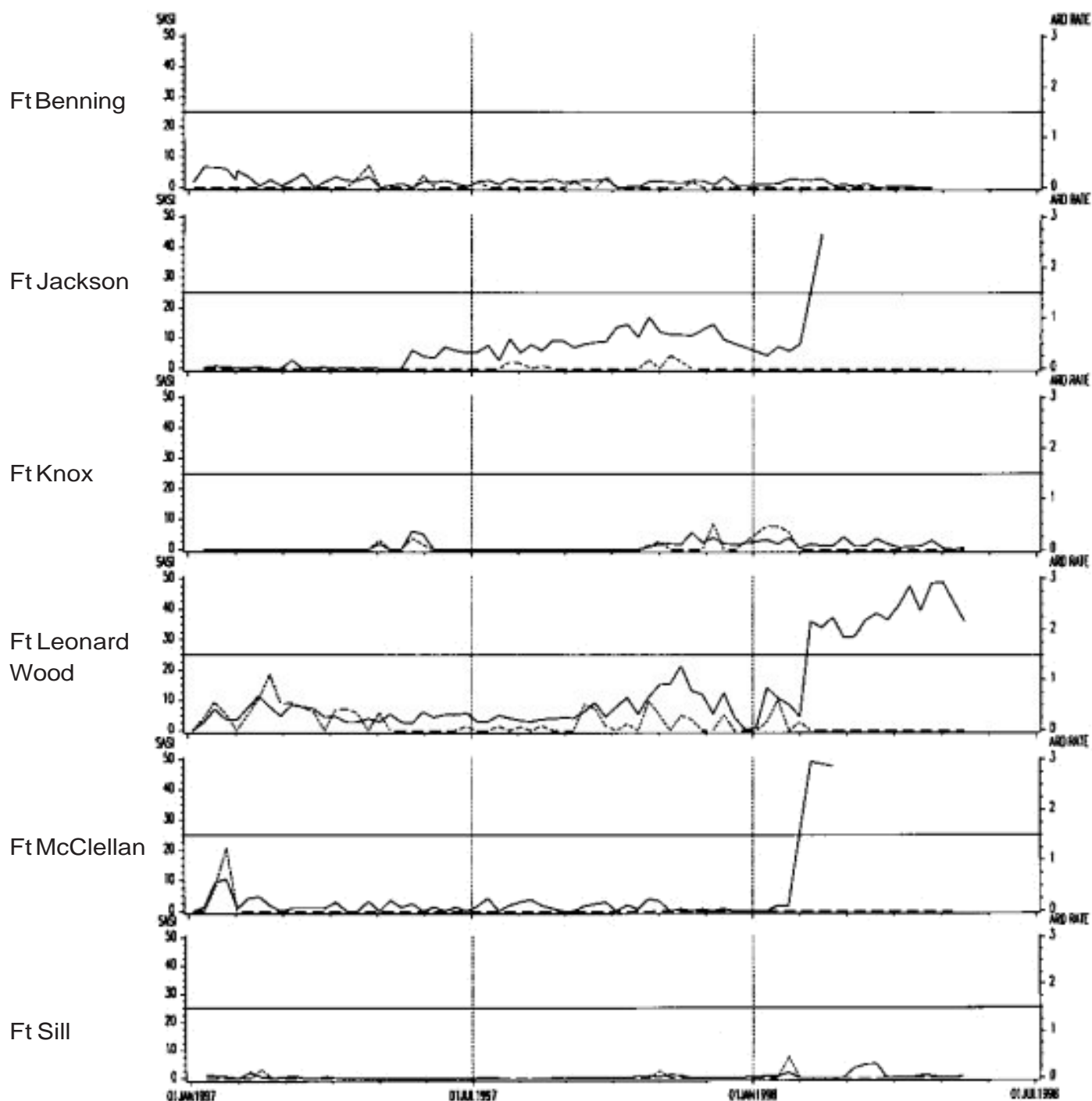
*Report and editorial comments provided by Donald A. Person, COL, MC, Chief, Department of Clinical Investigation, Tripler Army Medical Center, Hawaii.*

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ARD Surveillance UpdateLegend

—	ARD Rate	= (ARD cases / Trainees) * 100
- - -	SASI*	= ARD Rate * Strep Rate**



**Figure III. ARD surveillance rates, submitted by Army TRADOC posts**

\* Strep/ARD Surveillance Index (SASI)

\*\*Strep Rate= (GABHS(+) / Cultures) \*100

Note: SASI has proven to be a reliable predictor of serious strep-related morbidity, especially acute rheumatic fever.



## Outbreak Report

### **Varicella outbreak among initial entry trainees, Fort Knox, Kentucky**

*Index case:* In late February, 1998, a recent enlistee in the US Army was driven by his recruiter to the local airport. The new soldier told his recruiter that he did not feel well; specifically, he was feverish and had a facial rash. Still, he boarded the first of three commercial airliners that transported him from his home to an airport near his first duty station. From the airport, he traveled for approximately one hour on a military bus until, late at night, he reported to the Fort Knox, Kentucky, trainee reception station.

The following morning, after showering and eating with other recent arrivals, he reported to sick call, was diagnosed with varicella, and was hospitalized. When the reception battalion was informed of the soldier's diagnosis, the unit's first sergeant segregated the remaining trainees based on their self-reported histories regarding chickenpox (ten of 35 trainees in the unit at the time denied previous episodes). Although the two groups were subsequently separated, they continued to be billeted on the same floor of the barracks, and they shared shower and latrine facilities. When the contemporaries of the index case completed their reception station processing, they were assigned to one of two basic training companies ("A" and "B" in the figure).

*Secondary cases:* Fifteen days after the index case was hospitalized, six trainees were diagnosed with varicella, and over the next three days, three more cases were hospitalized (one varicella diagnosis was later changed). Thus, there were a total of eight secondary cases. All secondary cases were contemporaries of the index case in the reception station, and with one exception, their periods of exposure to the index case were less than 6-8 hours. One secondary case shared the hour long bus ride from the airport to Fort Knox with the index case. Secondary cases emerged from both training units to which reception station contemporaries of the index case were assigned.

The crude secondary attack rate among reception station contemporaries of the index case was 23% (8/35). Six of ten trainees (60%) who denied previous experience with varicella, and two of 25 (8%) with positive histories, were clinically diagnosed with varicella.

*Tertiary case:* Eighteen days after the last secondary case presented, a final (tertiary) case was diagnosed. This trainee denied a history of chickenpox, but he had received varicella vaccine 16 days prior to the onset of his illness. The tertiary case arrived at the reception station after the index case was already hospitalized, but he was assigned to the same training company as seven of the eight secondary cases.

Among 320 soldiers (52 with negative histories of chickenpox) who were assigned to the same training companies as secondary cases, there was only one tertiary case. Thus, in the wake of an aggressive preventive medicine response which included immunization of all potentially exposed immunologic susceptibles, the crude tertiary attack rate was only 0.3%.

*Preventive medicine response:* Varicella information briefings were given to units to which secondary cases had been assigned; and in each of the units, presumed susceptibles were identified and immunized. For intervention purposes, "susceptibles" were defined as cadre and trainees with no self-reported histories of chickenpox. In all, 52 susceptibles were identified and immunized out of 320 soldiers who were exposed to cases during their estimated periods of contagiousness.

**Editorial comment:** This outbreak among military trainees demonstrates the extreme communicability of varicella among immunologically naïve members of close quartered populations. Most Americans develop immunity to varicella after natural infections as children. However, in the unique circumstances of military basic training, highly contagious respiratory-transmissible infectious agents (such

as varicella, measles, influenza, adenoviruses) can efficiently spread among nonimmunes (even if relatively few), propagate in cycles of transmission among new susceptibles that continuously enter the trainee population, interfere with the efficient delivery of medical care, and disrupt the orderly conduct of military training. In this outbreak, for example, six of the ten cases were "recycled" and one required convalescent leave before rejoining training.

A safe and effective varicella vaccine is available in the United States,<sup>1</sup> but its routine use among military accessions is not currently recommended. In light of recurrent cases and clusters among active duty soldiers,<sup>2</sup> however, Army policy regarding its use is being reevaluated from a cost-effectiveness perspective.

It is uncertain whether routine varicella vaccination in the reception station would have prevented or significantly altered the Fort Knox outbreak (since all secondary cases were probably infected before they received routine immunizations). While the current vaccine is not recom-

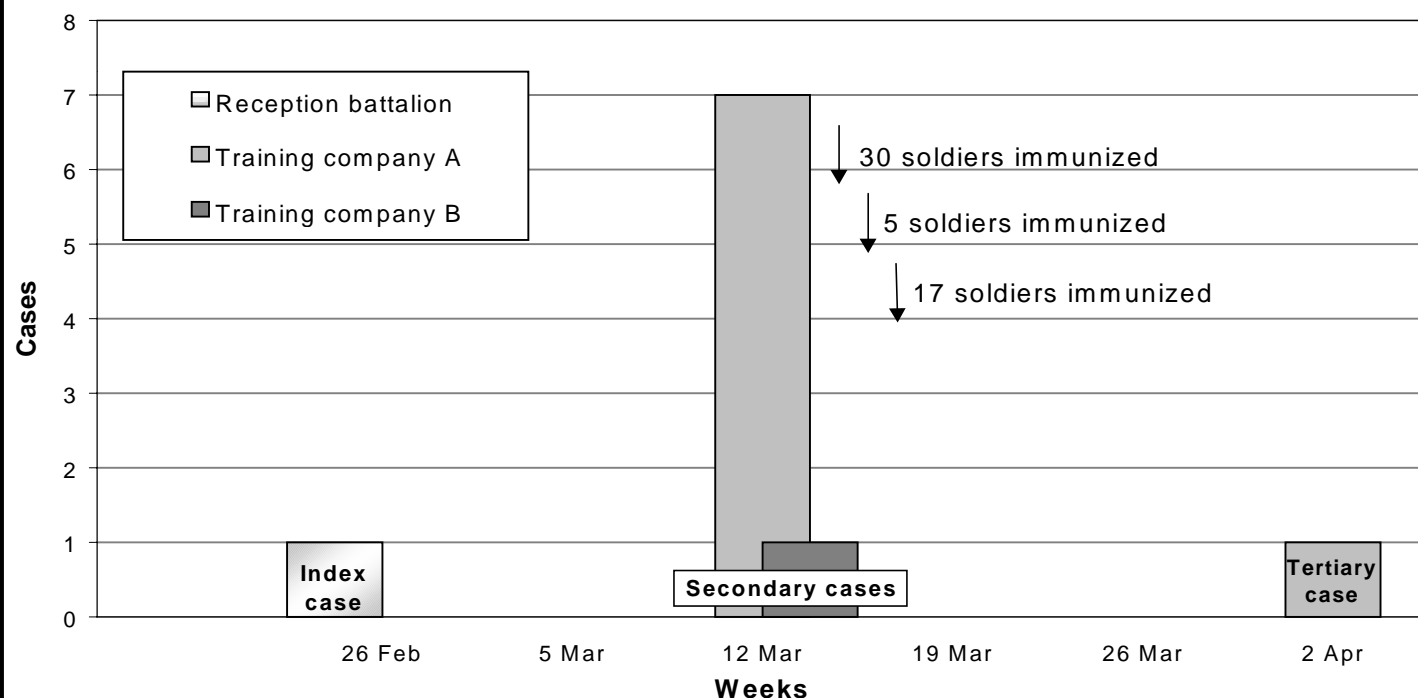
mended or indicated for postexposure prophylactic use,<sup>1</sup> several studies have shown that postexposure vaccination can prevent or significantly ameliorate the clinical manifestations of varicella in hospital and household contacts.<sup>3</sup> It seems clear, however, that the rapid preventive action of vaccinating all presumed susceptibles in "exposed" training companies interrupted potential chains of transmission and thus prevented additional cases.

*Reported by David W. Niebuhr, LTC, MC, Chief, Preventive Medicine Service, USAMEDDAC, Fort Knox, Kentucky.*

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### Varicella outbreak among military trainees, Fort Knox, Kentucky, February - April 1998



*Supplement #1 (Hospitalization Summary, 1997)***TABLE S1. Active Duty Hospitalizations, United States Army, 1997**

ICD-9 Category	Males							Females							All
	< 20	20-24	25-29	30-34	35-39	>= 40	Total M	< 20	20-24	25-29	30-34	35-39	>= 40	Total F	
<b>Infectious and Parasitic Diseases</b>	158	309	143	73	42	38	<b>763</b>	40	63	25	19	10	5	<b>162</b>	<b>925</b>
<b>Neoplasms</b>	17	93	100	56	70	120	<b>456</b>	5	40	39	77	115	117	<b>393</b>	<b>849</b>
<b>Endocrine, Nutritional, and Metabolic Disease and Immunity Disorders</b>	26	43	41	24	23	33	<b>190</b>	5	16	9	20	22	19	<b>91</b>	<b>281</b>
<b>Diseases of the Blood and Blood-Forming Organs</b>	3	24	17	14	8	8	<b>74</b>	5	10	6	3	4	7	<b>35</b>	<b>109</b>
<b>Mental Disorders</b>	428	1352	718	350	279	123	<b>3250</b>	197	336	205	87	57	47	<b>929</b>	<b>4179</b>
<b>Diseases of the Nervous System and Sense Organs</b>	21	114	114	110	85	69	<b>513</b>	14	48	35	24	18	20	<b>159</b>	<b>672</b>
<b>Diseases of the Circulatory System</b>	23	102	89	117	144	278	<b>753</b>	6	21	14	11	12	17	<b>81</b>	<b>834</b>
<b>Diseases of the Respiratory System</b>	272	505	248	163	129	118	<b>1435</b>	97	102	70	41	35	18	<b>363</b>	<b>1798</b>
<b>Diseases of the Digestive System</b>	206	851	541	376	299	251	<b>2524</b>	61	217	139	102	73	47	<b>639</b>	<b>3163</b>
<b>Diseases of the Genitourinary System</b>	32	129	116	116	83	110	<b>586</b>	71	247	180	170	130	111	<b>909</b>	<b>1495</b>
<b>Complications of Pregnancy, Childbirth, and the Puerperium*</b>	-	-	-	-	-	-	-	411	2648	1592	654	269	39	<b>5613</b>	<b>5613</b>
<b>Diseases of the Skin and Subcutaneous Tissue</b>	74	184	109	59	27	34	<b>487</b>	17	24	16	21	19	12	<b>109</b>	<b>596</b>
<b>Diseases of Musculoskeletal System and Connective Tissue</b>	91	912	871	772	676	544	<b>3866</b>	31	152	160	117	86	89	<b>635</b>	<b>4501</b>
<b>Congenital Abnormalities</b>	8	44	44	19	19	21	<b>155</b>	0	7	11	7	3	4	<b>32</b>	<b>187</b>
<b>Symptoms, Signs, and ill-Defined Conditions</b>	72	211	152	129	137	213	<b>914</b>	38	79	67	26	23	45	<b>278</b>	<b>1192</b>
<b>Injury and Poisoning</b>	307	1174	749	455	283	200	<b>3168</b>	64	158	107	51	32	31	<b>443</b>	<b>3611</b>
<b>Disease, not fully coded</b>	0	0	0	0	0	0	<b>0</b>	0	0	0	0	0	0	<b>0</b>	<b>0</b>
<b>Injury, not fully coded</b>	23	144	107	76	71	77	<b>498</b>	13	64	68	66	26	21	<b>258</b>	<b>756</b>
<b>All Hospitalizations</b>	<b>1761</b>	<b>6191</b>	<b>4159</b>	<b>2909</b>	<b>2375</b>	<b>2237</b>	<b>19632</b>	<b>1075</b>	<b>4232</b>	<b>2743</b>	<b>1496</b>	<b>934</b>	<b>649</b>	<b>11129</b>	<b>30761</b>

\* Includes normal delivery

Source: Standard Inpatient Data Record (SIDR), Corporate Executive Information Systems (CEIS) Program Office

**TABLE S2. Active Duty Hospitalization Rates, United States Army, 1997\***

ICD-9 Category	Males							Females							All
	< 20	20-24	25-29	30-34	35-39	>= 40	Total M	< 20	20-24	25-29	30-34	35-39	>= 40	Total F	
<b>Infectious and Parasitic Diseases</b>	5.1	2.6	1.5	1.0	0.8	1.0	<b>1.9</b>	5.3	2.8	1.5	1.8	1.3	1.0	<b>2.3</b>	<b>1.9</b>
<b>Neoplasms</b>	0.5	0.8	1.0	0.8	1.3	3.2	<b>1.1</b>	0.7	1.8	2.3	7.1	14.5	22.4	<b>5.5</b>	<b>1.8</b>
<b>Endocrine, Nutritional, and Metabolic Disease and Immunity Disorders</b>	0.8	0.4	0.4	0.3	0.4	0.9	<b>0.5</b>	0.7	0.7	0.5	1.9	2.8	3.6	<b>1.3</b>	<b>0.6</b>
<b>Diseases of the Blood and Blood-Forming Organs</b>	0.1	0.2	0.2	0.2	0.2	0.2	<b>0.2</b>	0.7	0.4	0.3	0.3	0.5	1.3	<b>0.5</b>	<b>0.2</b>
<b>Mental Disorders</b>	13.7	11.2	7.5	4.9	5.3	3.3	<b>7.9</b>	26.2	14.7	11.9	8.1	7.2	9.0	<b>13.0</b>	<b>8.7</b>
<b>Diseases of the Nervous System and Sense Organs</b>	0.7	0.9	1.2	1.5	1.6	1.8	<b>1.3</b>	1.9	2.1	2.0	2.2	2.3	3.8	<b>2.2</b>	<b>1.4</b>
<b>Diseases of the Circulatory System</b>	0.7	0.8	0.9	1.6	2.7	7.4	<b>1.8</b>	0.8	0.9	0.8	1.0	1.5	3.3	<b>1.1</b>	<b>1.7</b>
<b>Diseases of the Respiratory System</b>	8.7	4.2	2.6	2.3	2.4	3.2	<b>3.5</b>	12.9	4.5	4.1	3.8	4.4	3.4	<b>5.1</b>	<b>3.7</b>
<b>Diseases of the Digestive System</b>	6.6	7.0	5.6	5.3	5.6	6.7	<b>6.2</b>	8.1	9.5	8.1	9.4	9.2	9.0	<b>8.9</b>	<b>6.6</b>
<b>Diseases of the Genitourinary System</b>	1.0	1.1	1.2	1.6	1.6	2.9	<b>1.4</b>	9.5	10.8	10.5	15.7	16.3	21.2	<b>12.7</b>	<b>3.1</b>
<b>Complications of Pregnancy, Childbirth, and the Puerperium**</b>	-	-	-	-	-	-	-	54.7	115.9	92.8	60.5	33.8	7.5	<b>78.5</b>	<b>11.6</b>
<b>Diseases of the Skin and Subcutaneous Tissue</b>	2.4	1.5	1.1	0.8	0.5	0.9	<b>1.2</b>	2.3	1.1	0.9	1.9	2.4	2.3	<b>1.5</b>	<b>1.2</b>
<b>Diseases of Musculoskeletal System and Connective Tissue</b>	2.9	7.5	9.1	10.9	12.7	14.5	<b>9.4</b>	4.1	6.7	9.3	10.8	10.8	17.0	<b>8.9</b>	<b>9.3</b>
<b>Congenital Abnormalities</b>	0.3	0.4	0.5	0.3	0.4	0.6	<b>0.4</b>	0.0	0.3	0.6	0.6	0.4	0.8	<b>0.4</b>	<b>0.4</b>
<b>Symptoms, Signs, and ill-Defined Conditions</b>	2.3	1.7	1.6	1.8	2.6	5.7	<b>2.2</b>	5.1	3.5	3.9	2.4	2.9	8.6	<b>3.9</b>	<b>2.5</b>
<b>Injury and Poisoning</b>	9.8	9.7	7.8	6.4	5.3	5.3	<b>7.7</b>	8.5	6.9	6.2	4.7	4.0	5.9	<b>6.2</b>	<b>7.5</b>
<b>Disease, not fully coded</b>	0.0	0.0	0.0	0.0	0.0	0.0	<b>0.0</b>	0.0	0.0	0.0	0.0	0.0	0.0	<b>0.0</b>	<b>0.0</b>
<b>Injury, not fully coded</b>	0.7	1.2	1.1	1.1	1.3	2.1	<b>1.2</b>	1.7	2.8	4.0	6.1	3.3	4.0	<b>3.6</b>	<b>1.6</b>
<b>All Hospitalizations</b>	<b>56.3</b>	<b>51.2</b>	<b>43.4</b>	<b>40.9</b>	<b>44.7</b>	<b>59.7</b>	<b>47.9</b>	<b>143.1</b>	<b>185.2</b>	<b>159.8</b>	<b>138.5</b>	<b>117.4</b>	<b>124.2</b>	<b>155.6</b>	<b>63.8</b>

\* Rates are calculated per 1,000 soldiers per year based on cumulative person time.

\*\* Includes normal delivery

Source: Standard Inpatient Data Record (SIDR), Corporate Executive Information Systems (CEIS) Program Office

**TABLE S3. Total Active Duty Hospital Sick days, United States Army, 1997\***

ICD-9 Category	Males							Females							All
	< 20	20-24	25-29	30-34	35-39	>= 40	Total M	< 20	20-24	25-29	30-34	35-39	>= 40	Total F	
Infectious and Parasitic Diseases	820	1501	871	531	225	233	4181	166	281	111	85	38	31	712	4893
Neoplasms	234	725	810	291	920	857	3837	14	249	191	341	628	861	2284	6121
Endocrine, Nutritional, and Metabolic Disease and Immunity Disorders	120	188	377	82	76	179	1022	15	88	25	59	61	128	376	1398
Diseases of the Blood and Blood-Forming Organs	16	159	100	106	21	33	435	74	44	26	20	27	17	208	643
Mental Disorders	4452	14304	7827	3935	3493	1406	35417	1997	2927	2577	1479	660	530	10170	45587
Diseases of the Nervous System and Sense Organs	129	599	870	722	503	312	3135	92	215	301	147	62	61	878	4013
Diseases of the Circulatory System	207	589	757	595	588	1259	3995	30	122	44	42	48	68	354	4349
Diseases of the Respiratory System	980	1883	1028	496	423	507	5317	313	338	199	151	130	88	1219	6536
Diseases of the Digestive System	682	2808	1842	1552	1164	1219	9267	162	789	449	381	236	236	2253	11520
Diseases of the Genitourinary System	127	496	676	365	281	326	2271	300	838	598	634	489	421	3280	5551
Complications of Pregnancy, Childbirth, and the Puerperium**	-	-	-	-	-	-	-	1513	10451	6456	2900	1179	196	22695	22695
Diseases of the Skin and Subcutaneous Tissue	388	816	482	286	401	153	2526	80	101	48	69	72	77	447	2973
Diseases of Musculoskeletal System and Connective Tissue	425	3863	3397	2940	2831	1962	15418	171	568	563	428	366	309	2405	17823
Congenital Abnormalities	127	322	298	158	121	87	1113	0	43	30	58	11	18	160	1273
Symptoms, Signs, and ill-Defined Conditions	222	1193	750	393	418	611	3587	118	354	273	147	75	153	1120	4707
Injury and Poisoning	1789	7012	3156	2233	1451	1215	16856	513	908	570	269	182	152	2594	19450
Disease, not fully coded	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Injury, not fully coded	203	1525	521	334	430	766	3779	35	237	339	249	245	65	1170	4949
All Hospitalizations															
	37983		15019		11125		5593		12800		4509		52325		164481
10921		23762		13346		112156		18553		7459		3411			

\* Includes bed days, convalescent sick days and medical hold days

\*\* Includes normal delivery

Source: Standard Inpatient Data Record (SIDR), Corporate Executive Information Systems (CEIS) Program Office

**TABLE S4. Noneffective Rates, Active Duty Hospitalizations, United States Army, 1997\***

ICD-9 Category	Males							Females							All
	< 20	20-24	25-29	30-34	35-39	>= 40	Total M	< 20	20-24	25-29	30-34	35-39	>= 40	Total F	
<b>Infectious and Parasitic Diseases</b>	26.2	12.4	9.1	7.5	4.2	6.2	<b>10.2</b>	22.1	12.3	6.5	7.9	4.8	5.9	<b>10.0</b>	<b>10.1</b>
<b>Neoplasms</b>	7.5	6.0	8.5	4.1	17.3	22.9	<b>9.4</b>	1.9	10.9	11.1	31.6	78.9	164.8	<b>31.9</b>	<b>12.7</b>
<b>Endocrine, Nutritional, and Metabolic Disease and Immunity Disorders</b>	3.8	1.6	3.9	1.2	1.4	4.8	<b>2.5</b>	2.0	3.9	1.5	5.5	7.7	24.5	<b>5.3</b>	<b>2.9</b>
<b>Diseases of the Blood and Blood-Forming Organs</b>	0.5	1.3	1.0	1.5	0.4	0.9	<b>1.1</b>	9.9	1.9	1.5	1.9	3.4	3.3	<b>2.9</b>	<b>1.3</b>
<b>Mental Disorders</b>	142.4	118.2	81.7	55.4	65.8	37.5	<b>86.5</b>	265.8	128.1	150.2	136.9	82.9	101.5	<b>142.2</b>	<b>94.5</b>
<b>Diseases of the Nervous System and Sense Organs</b>	4.1	4.9	9.1	10.2	9.5	8.3	<b>7.7</b>	12.2	9.4	17.5	13.6	7.8	11.7	<b>12.3</b>	<b>8.3</b>
<b>Diseases of the Circulatory System</b>	6.6	4.9	7.9	8.4	11.1	33.6	<b>9.8</b>	4.0	5.3	2.6	3.9	6.0	13.0	<b>5.0</b>	<b>9.0</b>
<b>Diseases of the Respiratory System</b>	31.4	15.6	10.7	7.0	8.0	13.5	<b>13.0</b>	41.7	14.8	11.6	14.0	16.3	16.8	<b>17.0</b>	<b>13.6</b>
<b>Diseases of the Digestive System</b>	21.8	23.2	19.2	21.8	21.9	32.5	<b>22.6</b>	21.6	34.5	26.2	35.3	29.7	45.2	<b>31.5</b>	<b>23.9</b>
<b>Diseases of the Genitourinary System</b>	4.1	4.1	7.1	5.1	5.3	8.7	<b>5.5</b>	39.9	36.7	34.8	58.7	61.4	80.6	<b>45.9</b>	<b>11.5</b>
<b>Complications of Pregnancy, Childbirth, and the Puerperium**</b>	-	-	-	-	-	-	-	201.4	457.4	376.2	268.4	148.2	37.5	<b>317.4</b>	<b>47.1</b>
<b>Diseases of the Skin and Subcutaneous Tissue</b>	12.4	6.7	5.0	4.0	7.6	4.1	<b>6.2</b>	10.6	4.4	2.8	6.4	9.0	14.7	<b>6.3</b>	<b>6.2</b>
<b>Diseases of Musculoskeletal System and Connective Tissue</b>	13.6	31.9	35.5	41.4	53.3	52.4	<b>37.6</b>	22.8	24.9	32.8	39.6	46.0	59.2	<b>33.6</b>	<b>37.0</b>
<b>Congenital Abnormalities</b>	4.1	2.7	3.1	2.2	2.3	2.3	<b>2.7</b>	0.0	1.9	1.7	5.4	1.4	3.4	<b>2.2</b>	<b>2.6</b>
<b>Symptoms, Signs, and ill-Defined Conditions</b>	7.1	9.9	7.8	5.5	7.9	16.3	<b>8.8</b>	15.7	15.5	15.9	13.6	9.4	29.3	<b>15.7</b>	<b>9.8</b>
<b>Injury and Poisoning</b>	57.2	57.9	33.0	31.4	27.3	32.4	<b>41.1</b>	68.3	39.7	33.2	24.9	22.9	29.1	<b>36.3</b>	<b>40.3</b>
<b>Disease, not fully coded</b>	0.0	0.0	0.0	0.0	0.0	0.0	<b>0.0</b>	0.0	0.0	0.0	0.0	0.0	0.0	<b>0.0</b>	<b>0.0</b>
<b>Injury, not fully coded</b>	6.5	12.6	5.4	4.7	8.1	20.5	<b>9.2</b>	4.7	10.4	19.8	23.0	30.8	12.4	<b>16.4</b>	<b>10.3</b>
<b>All Hospitalizations</b>	<b>349</b>	<b>314</b>	<b>248</b>	<b>211</b>	<b>251</b>	<b>297</b>	<b>274</b>	<b>745</b>	<b>812</b>	<b>746</b>	<b>690</b>	<b>567</b>	<b>653</b>	<b>732</b>	<b>341</b>

\* Rates are calculated as hospital sick days per 1000 soldiers per year based on cumulative person time.

\*\* Includes normal delivery

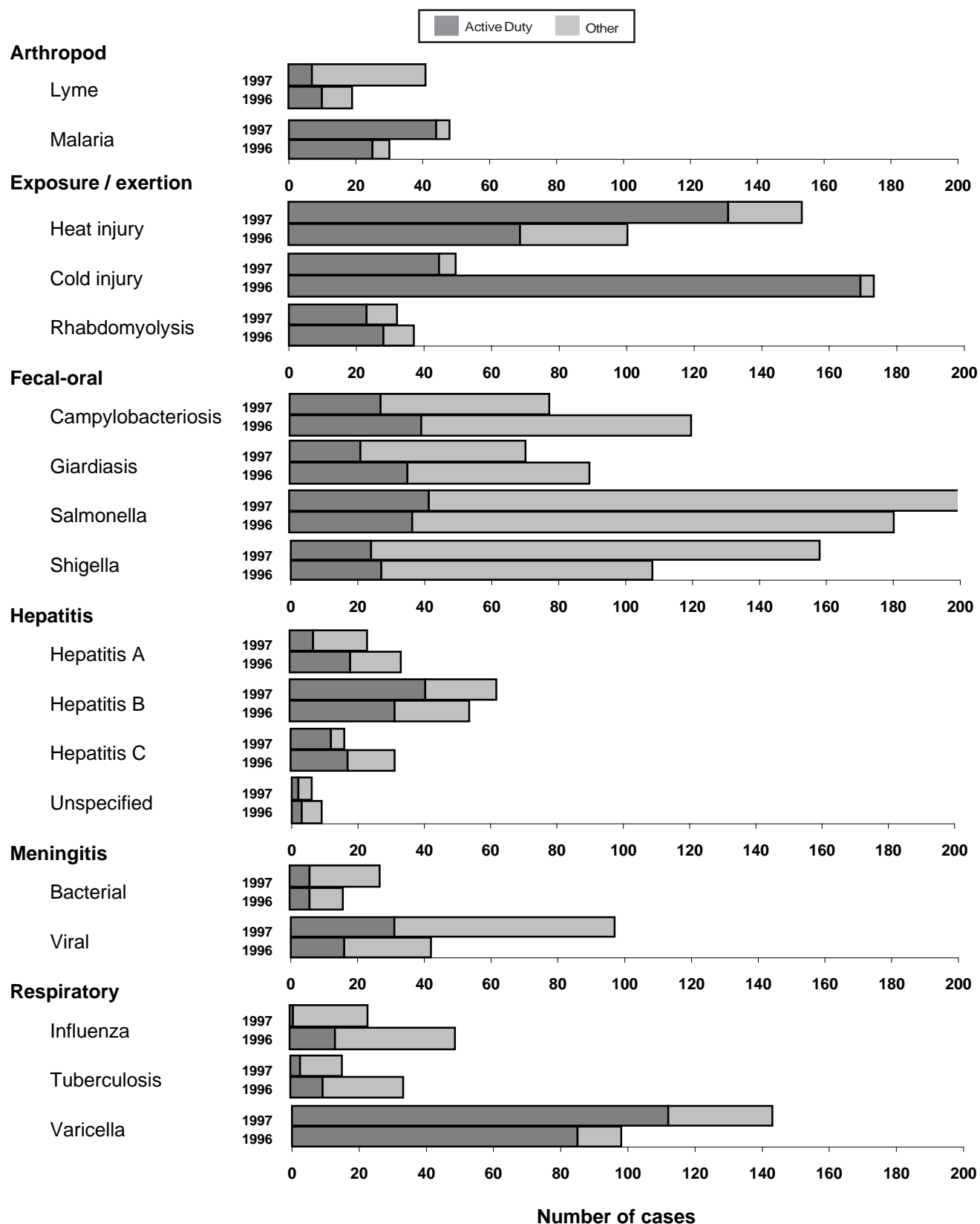
Source: Standard Inpatient Data Record (SIDR), Corporate Executive Information Systems (CEIS) Program Office

Supplement #2 (Reportable Disease Summary, 1997)**TABLE S5. Reportable conditions reported through Medical Surveillance System, Jan-Dec 1997\***

Diagnosis	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Total	Diagnosis	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Total
Amebiasis	0	0	0	0	0	Malaria, falciparum	1	0	5	2	8
Anthrax	0	0	0	0	0	Malaria, malariae	0	0	0	0	0
Arboviral fever, unsp.	0	0	0	0	0	Malaria, ovale	0	0	0	0	0
Asbestosis	0	0	0	0	0	Malaria, unspecified	0	4	0	1	5
Botulism	0	1	0	1	2	Malaria, vivax	1	4	25	5	35
Brucellosis	0	1	0	0	1	Measles	0	5	1	0	6
Campylobacteriosis	15	17	25	20	77	Meningitis, Viral	8	20	48	21	97
Carbon monoxide intx.	4	5	0	1	10	Meningitis, Bact.	6	8	5	9	28
Chancroid	0	0	1	0	1	Mercury intoxication	0	0	0	0	0
Chemical agent exp.	0	1	0	3	4	Mumps (adults only)	3	2	1	0	6
Chlamydia	1233	1273	1500	1277	5283	Mycobacterial inf.	1	1	3	5	10
Cholera	0	0	0	0	0	Pertussis	2	0	2	2	6
Coccidioidomycosis	2	1	0	1	4	Plague	0	0	0	0	0
CWI, frostbite	26	0	0	16	42	Pneumococcal pneum.	0	1	1	0	2
CWI, hypothermia	0	0	0	4	4	Poliomyelitis	0	0	0	0	0
CWI, immersion type	0	0	0	0	0	Psittacosis	0	0	0	0	0
CWI, unspecified	1	0	0	3	4	Q fever	0	0	0	0	0
Dengue fever	1	2	0	1	4	Rabies, human	0	0	0	0	0
Diphtheria	0	0	0	0	0	Radiation injury	0	0	0	2	2
Ehrlichiosis	0	0	2	0	2	Relapsing fever	0	0	0	0	0
Encephalitis	1	1	1	1	4	Reye syndrome	0	0	0	0	0
Giardiasis	15	9	28	18	70	Rhabdomyolysis	7	6	13	6	32
Gonorrhea	390	401	473	435	1699	Rheumatic fever	0	0	0	0	0
Granuloma Inguinale	8	2	1	0	11	Rift Valley Fever	0	0	0	0	0
Guillain-Barre Syndrome	3	1	0	0	4	RMSF	0	0	0	0	0
H. influenzae, inv.	2	3	2	3	10	Rubella	1	1	0	0	2
Heat exhaustion	4	35	54	5	98	Salmonellosis	17	38	99	53	207
Heat stroke	6	12	30	3	51	Schistosomiasis	0	0	0	0	0
Hemorrhagic fever	0	0	0	2	2	Shigellosis	6	39	58	32	135
Hepatitis A, Acute	4	9	7	3	23	Syphilis, congenital	1	1	1	1	4
Hepatitis B, Acute	20	12	13	16	61	Syphilis, tertiary	0	2	0	1	3
Hepatitis C, Acute	2	6	6	2	16	Syphilis, latent	6	3	8	4	21
Hepatitis, unspec.	0	1	2	3	6	Syphilis, prim/sec	5	5	13	5	28
Herpes Simplex	203	173	155	181	712	Syphilis, unspec.	6	4	11	6	27
Influenza	19	0	0	5	24	Tetanus	0	0	0	0	0
Kawasaki syndrome	2	1	0	4	7	Toxic shock syndrome	0	0	1	0	1
Lead poisoning	2	3	2	0	7	Toxoplasmosis	0	1	0	0	1
Legionellosis	0	0	0	0	0	Trichinellosis	0	0	0	0	0
Leish, cutaneous	14	5	3	4	26	Trypanosomiasis, Afr.	0	0	0	0	0
Leish, mucocutaneous	0	0	0	0	0	Trypanosomiasis, Amer.	0	0	0	0	0
Leish, unspecified	0	0	0	0	0	Tuberculosis, pulmonary	5	5	4	2	16
Leish, visceral	0	0	0	0	0	Tularemia	1	0	0	1	2
Leish, viscerotropic	0	0	0	0	0	Typhoid fever	0	0	1	0	1
Leprosy	0	1	1	0	2	Typhus fever	0	0	0	0	0
Leptospirosis	0	0	0	0	0	Urethritis, non-specific	205	214	220	199	838
Listeriosis	0	0	0	0	0	Vaccine advrs event	0	0	0	0	0
Lyme disease	4	7	25	5	41	Varicella, adult only	63	34	25	21	143
Lymphogranuloma Vnrm	12	14	1	2	29	Yellow fever	0	0	0	0	0
<b>Total</b>						<b>2338</b>	<b>2395</b>	<b>2877</b>	<b>2397</b>	<b>10007</b>	

\* Based on date of onset.

**FIGURE S1. Sentinel reportable diseases, United States Army\***  
**Comparison of 1997 and 1996**



\* Based on date of onset.

\*\* Reports are included from main and satellite clinics. Not all sites reporting.



**TABLE S6. Cases of notifiable sexually transmitted diseases, United States Army, Jan-Dec 1997\***

Reporting MTF/Post**	Chlamydia				Urethritis non-spec.				Gonorrhea				Herpes Simplex				Syphilis Prim/Sec				Syphilis Latent			
	Active Duty		Other		Active Duty		Other		Active Duty		Other		Active Duty		Other		Active Duty		Other		Active Duty		Other	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
<b>NORTH ATLANTIC RMC</b>																								
Walter Reed AMC	9	16	7	19	4	0	6	0	1	2	11	7	5	9	4	9	0	0	2	0	0	0	0	0
Aberdeen Prov. Ground, MD	10	5	3	3	3	0	1	0	14	4	3	1	1	2	2	1	0	0	0	0	0	0	0	0
FT Belvoir, VA	20	22	17	102	0	0	0	0	9	5	9	13	3	5	3	8	1	0	0	0	1	0	1	0
FT Bragg, NC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FT Drum, NY	64	23	2	18	7	0	0	0	30	9	0	0	3	1	0	1	3	0	0	0	0	0	0	0
FT Eustis, VA	35	33	9	56	0	0	0	0	13	2	4	7	0	0	0	1	1	0	0	0	1	0	0	0
FT Knox, KY	53	16	8	47	0	0	0	0	39	2	5	13	15	9	1	18	0	0	0	0	1	0	0	1
FT Lee, VA	5	8	1	6	0	0	0	0	1	5	2	1	0	0	0	0	0	0	0	0	0	0	0	0
FT Meade, MD	10	7	3	11	10	1	18	0	1	1	2	2	2	3	5	0	0	0	0	0	0	0	0	0
West Point, NY	1	1	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
<b>GREAT PLAINS RMC</b>																								
Brooke AMC	31	49	14	80	0	0	0	0	13	7	16	16	1	7	1	1	1	0	0	0	0	0	0	0
Beaumont AMC	82	81	13	127	0	0	0	0	30	13	2	16	14	11	2	27	2	0	0	0	1	0	0	0
FT Carson, CO	150	81	12	76	203	0	22	0	60	7	1	16	16	17	1	27	0	0	0	0	0	0	0	1
FT Hood, TX	268	219	15	190	192	0	10	0	259	64	30	54	34	15	2	8	4	2	2	5	2	0	0	1
FT Huachuca, AZ	17	11	2	8	0	0	0	0	4	2	0	0	1	0	0	2	0	0	0	0	0	0	0	0
FT Leavenworth, KS	6	10	1	16	0	0	0	0	2	1	0	3	0	0	0	0	0	0	0	0	0	0	0	0
FT Leonard Wood, MO	30	27	10	37	22	0	6	0	4	15	5	5	0	0	0	0	0	0	0	0	1	0	0	0
FT Polk, LA	23	29	0	4	0	0	0	0	11	3	0	4	5	0	0	0	0	0	0	0	1	0	0	1
FT Riley, KS	84	57	4	51	0	0	0	0	21	16	2	9	0	0	0	0	0	0	0	0	1	0	0	0
FT Sill, OK	95	39	3	44	38	2	0	2	60	7	3	9	7	3	0	1	0	0	0	0	0	0	0	0
<b>SOUTHEAST RMC</b>																								
Eisenhower AMC	36	41	2	20	0	0	0	0	17	7	0	3	16	22	1	11	1	0	0	0	0	0	0	0
FT Benning, GA	30	23	6	42	0	0	0	0	48	7	12	7	23	5	2	6	0	1	0	0	1	0	1	0
FT Campbell, KY	76	127	8	117	0	0	0	0	111	32	8	31	15	4	0	3	0	0	0	0	0	1	0	0
FT Jackson, SC	14	605 <sup>§</sup>	1	16	0	0	0	0	8	15	0	3	1	40	0	1	1	0	0	0	0	0	0	0
FT McClellan, AL	2	6	0	1	0	0	0	0	3	2	1	0	0	1	0	0	0	0	0	0	0	0	0	0
FT Rucker, AL	3	12	0	21	0	0	0	0	3	3	0	1	3	1	0	2	0	0	0	0	0	0	0	0
FT Stewart, GA	12	58	0	47	155	0	10	0	73	9	7	8	28	17	3	11	0	0	0	0	2	0	0	0
<b>WESTERN RMC</b>																								
Madigan AMC	74	63	11	114	108	0	18	0	24	15	7	15	22	7	3	19	0	0	0	0	0	0	0	0
FT Irwin, CA	20	11	0	9	0	0	0	0	5	2	0	1	2	1	0	1	0	1	0	0	0	0	0	0
FT Wainwright, AK	7	8	0	8	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
<b>OTHER LOCATIONS</b>																								
Tripler	64	45	7	42	0	0	0	0	25	12	0	11	27	33	5	28	0	0	0	0	0	0	0	0
Europe	348	225	35	119	12	0	0	0	117	24	13	18	17	13	2	2	2	1	0	0	0	0	0	0
Korea	9	26	0	3	0	0	0	0	1	1	0	1	1	1	0	1	0	0	0	0	0	0	0	0
<b>Sub-Total</b>	<b>1688</b>	<b>1379</b>	<b>194</b>	<b>1460</b>	<b>754</b>	<b>3</b>	<b>91</b>	<b>2</b>	<b>1007</b>	<b>295</b>	<b>143</b>	<b>275</b>	<b>262</b>	<b>228</b>	<b>37</b>	<b>189</b>	<b>16</b>	<b>5</b>	<b>4</b>	<b>5</b>	<b>12</b>	<b>1</b>	<b>3</b>	<b>5</b>
<b>Total</b>	<b>3067</b>		<b>1654</b>		<b>757</b>		<b>93</b>		<b>1302</b>		<b>418</b>		<b>490</b>		<b>226</b>		<b>21</b>		<b>9</b>		<b>13</b>		<b>8</b>	

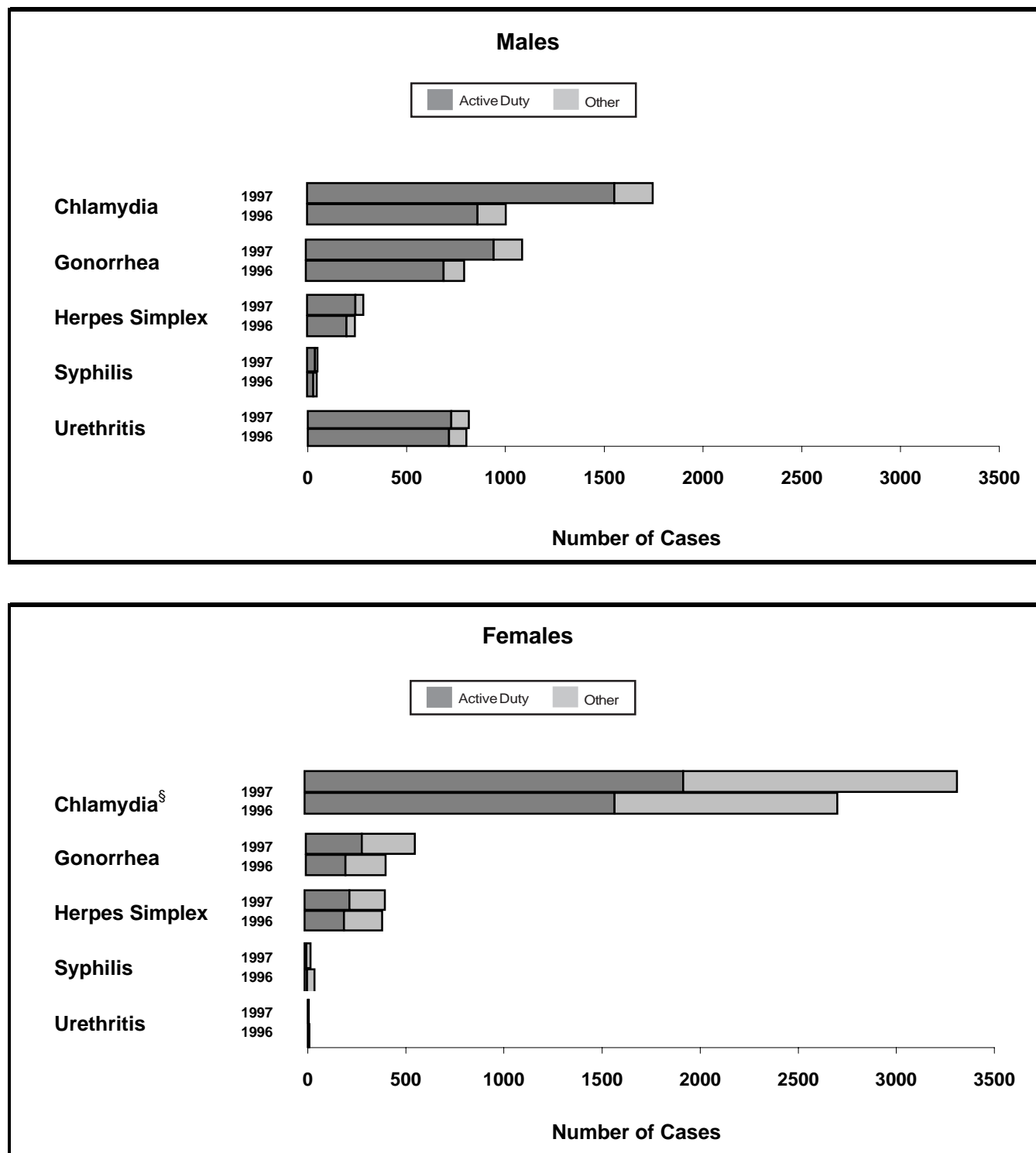
\* Active Duty refers to Army Active Duty only.

\*\* Reports are included from main and satellite clinics. Not all sites reporting.

Date of Report: 7-Apr-98

§ Includes participants in a large-scale ongoing chlamydia study (females only).

**FIGURE S2. Sentinel reportable STDs, United States Army\***  
**Comparison of 1997 and 1996, by gender**



\* Based on date of onset.

\*\* Reports are included from main and satellite clinics. Not all sites reporting.

§ Includes participants in a large-scale ongoing chlamydia study (females only).

Date of Report: 7-Apr-98

**TABLE S7. Active duty force strength by MTF, United States Army, December, 1997\***

MTF/Post**	Males							Females							All
	< 20	20-24	25-29	30-34	35-39	>= 40	Total M	< 20	20-24	25-29	30-34	35-39	>= 40	Total F	
NORTH ATLANTIC RMC															
Walter Reed AMC	202	1292	1317	1506	1768	3157	9242	25	389	547	503	474	569	2507	11749
Aberdeen Prov. Ground, MD	871	572	327	378	403	358	2909	115	118	94	69	51	32	479	3388
FT Belvoir, VA	28	260	322	318	300	384	1612	7	92	136	99	81	57	472	2084
FT Bragg, NC	1758	11956	9045	6290	4116	2430	35595	295	1607	1303	721	445	254	4625	40220
FT Drum, NY	618	3510	2425	1351	950	485	9339	87	455	255	146	91	46	1080	10419
FT Eustis, VA	599	1439	1157	981	862	809	5847	170	456	322	171	157	103	1379	7226
FT Knox, KY	1421	2297	1497	1382	1310	797	8704	38	207	158	150	100	72	725	9429
FT Lee, VA	944	1038	778	648	447	383	4238	484	442	262	169	117	88	1562	5800
FT Meade, MD	87	754	1023	964	746	902	4476	54	298	314	210	201	160	1237	5713
West Point, NY	30	264	277	700	589	594	2454	6	65	58	120	97	71	417	2871
GREAT PLAINS RMC															
Brooke AMC	657	839	974	1001	784	930	5185	424	393	419	367	305	307	2215	7400
Wm Beaumont AMC	786	2391	1899	1336	1115	1096	8623	163	695	461	234	154	146	1853	10476
FT Carson, CO	679	4267	3338	2112	1514	762	12672	161	675	440	252	161	97	1786	14458
FT Hood, TX	2265	13115	9037	5621	3759	2289	36086	424	2376	1648	859	597	317	6221	42307
FT Huachuca, AZ	402	1036	1012	793	677	440	4360	159	330	223	157	132	86	1087	5447
FT Leavenworth, KS	37	248	245	537	837	596	2500	21	97	68	85	92	48	411	2911
FT Leonard Wood, MO	1180	1539	1093	1067	827	477	6183	464	547	305	163	105	57	1641	7824
FT Polk, LA	440	2518	1697	1226	773	406	7060	100	423	256	149	88	59	1075	8135
FT Riley, KS	686	3745	2196	1332	885	445	9289	113	478	264	161	88	68	1172	10461
FT Sill, OK	1821	4062	2635	1728	1397	815	12458	130	458	312	199	114	76	1289	13747
Panama	67	541	609	517	431	330	2495	12	75	92	46	34	21	280	2775
SOUTHEAST RMC															
Eisenhower AMC	1799	2012	1495	1175	1247	1173	8901	446	594	481	350	350	233	2454	11355
FT Benning, GA	2742	4838	3227	2102	1412	759	15080	114	477	378	223	148	69	1409	16489
FT Campbell, KY	908	6858	5832	3462	2268	1115	20443	158	1028	716	412	237	100	2651	23094
FT Jackson, SC	1453	1313	820	959	696	453	5694	959	885	473	334	166	103	2920	8614
FT McClellan, AL	949	717	457	572	529	410	3634	376	286	166	113	92	57	1090	4724
FT Rucker, AL	95	619	909	617	484	433	3157	70	189	133	65	57	35	549	3706
FT Stewart, GA	1129	5983	4349	2646	1849	1006	16962	188	1020	752	377	233	116	2686	19648
WESTERN RMC															
Madigan AMC	921	4987	3908	2627	1916	1269	15628	171	856	624	351	242	216	2460	18088
FT Irwin, CA	139	1228	910	721	513	275	3786	28	169	128	72	49	28	474	4260
FT Wainwright, AK	285	1886	1731	1011	610	313	5836	51	308	235	143	113	55	905	6741
OTHER LOCATIONS															
Tripler AMC	524	4072	3426	2213	1581	976	12792	139	724	711	416	312	196	2498	15290
Europe	1266	11406	10917	7421	5519	3780	40309	321	2223	1924	1203	869	523	7063	47372
Korea	1934	8330	6088	4300	3213	2129	25994	469	1543	1066	617	526	282	4503	30497
Unknown	1533	9095	8785	9433	6779	4480	40105	570	1869	1436	1099	880	477	6331	47453§
Total	31255	121027	95757	71047	53106	37456	409648	7512	22847	17160	10805	7958	5224	71506	482171

\* Based on duty zip code. Does not account for TDY.

§ Includes unknown age groups and unknown gender.

\*\* Includes any subordinate catchment areas not listed separately.

Source: Defense Manpower Data Center (DMDC)



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